(19)日本国特許庁（ＪＰ）　(12)公開特許公報（A）　(11)特許出願公開番号
特開2000－103141
（P2000－103141A）
(43)公開日　平成12年４月11日(2000.4.11)

(51)Int.Cl.'	識別記号	FI		テーマコード'（参考）
B41J 29/38		B41J 29/38	Z	2C061
B41M 3/14		B41M 3/14		2H034
G03G 21/04		G03G 21/00	550	2H113

審査請求　未請求　請求項の数10　ＯＬ　（全 14 頁）

(21)出願番号　特願平10－274505

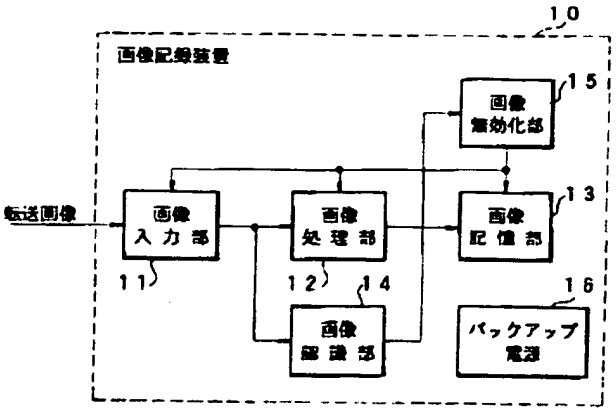
(22)出願日　平成10年９月29日(1998.9.29)

(71)出願人　000005496
富士ゼロックス株式会社
東京都港区赤坂二丁目17番22号
(72)発明者　粟田　恵徳
神奈川県海老名市本郷2274番地　富士ゼロックス株式会社海老名事業所内
(72)発明者　▲高▼橋　憲一
神奈川県海老名市本郷2274番地　富士ゼロックス株式会社海老名事業所内
(74)代理人　100086298
弁理士　船橋　國則

最終頁に続く

(54)【発明の名称】　画像記録装置

(57)【要約】
【課題】　特定画像の有無の判別が行われた時点で、特定画像の一部ないしは全てが記録されてしまう画像記録装置においては、従来の無効化技術をそのまま適用できない。
【解決手段】　画像認識部１４にて特定画像の有無の判別が行われた時点で、画像記録部１３にて特定画像の一部ないしは全部が記録媒体に記録されてしまっている画像記録装置１０において、記録媒体上に記録済みの画像に対して無効化処理を施す画像無効化部１３を設け、特定画像の偽造行為を防止する。



1

【特許請求の範囲】

【請求項１】　画像データを入力する画像入力手段と、前記画像入力手段から入力された画像データに対応した画像を記録媒体上に記録する画像記録手段と、前記画像入力手段から入力された画像データに対応する画像中に記録を禁止すべき特定画像が含まれているか否かを認識する画像認識手段と、前記画像認識手段によって前記特定画像が含まれていると認識された場合に、前記画像記録手段によって前記記録媒体上に既に記録されている画像を無効化する無効化手段とを備えることを特徴とする画像記録装置。

【請求項２】　前記画像記録手段は、前記画像入力手段から入力された画像データに対応した画像を１ラインずつ記録媒体上に記録することを特徴とする請求項１記載の画像記録装置。

【請求項３】　前記無効化手段は、記録済みの記録媒体上に重ねて無効化画像を記録することを特徴とする請求項１又は２記載の画像記録装置。

【請求項４】　前記無効化手段は、記録媒体を全てあるいは所定部分量だけ逆送させて無効化画像を記録することを特徴とする請求項１，２又は３記載の画像記録装置。

【請求項５】　前記無効化手段は、前記画像記録手段をライン方向に全てあるいは所定部分量だけ逆送または順送させて無効化画像を記録することを特徴とする請求項１，２又は３記載の画像記録装置。

【請求項６】　前記無効化手段は、前記画像記録手段を通常記録時よりも高速に動作させて無効化画像を記録することを特徴とする請求項１，２又は３記載の画像記録装置。

【請求項７】　前記無効化画像は、全色あるいは単色のべた画像であることを特徴とする請求項１，２又は３記載の画像記録装置。

【請求項８】　前記無効化画像は、所定線画あるいは文字で構成される警告画像であることを特徴とする請求項１，２又は３記載の画像記録装置。

【請求項９】　前記無効化手段は、記録済みの記録媒体に対して損傷を与える媒体損傷手段であることを特徴とする請求項１又は２記載の画像記録装置。

【請求項１０】　前記画像入力手段、前記画像記録手段、前記画像認識手段および前記無効化手段のうち、１つまたは複数が削除あるいは置換された際には画像記録動作そのものを制御あるいは停止することを特徴とする請求項１又は２記載の画像記録装置。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、入力画像データに対応した画像を記録媒体上に記録する画像記録装置に関し、特に紙幣や有価証券、あるいはマル秘文書などの特定の画像の偽造行為を防止する機能を備えた画像記録装置に関する。

2

【０００２】

【従来の技術】画像記録装置において、従来、紙幣や有価証券、あるいはマル秘文書などの特定の画像の偽造行為を防止することを目的として、入力画像の中に紙幣や有価証券、あるいはマル秘文書などの特定の画像が存在するか否かを確認し、特定画像が存在すると判断した場合に所定の処理を施すことによって対処していた。その処理方式として、従来、種々の方式が提案されている。

【０００３】その方式の一つとしては、画像出力動作を中止あるいは禁止する。他の方式としては、無効化画像を出力する。さらに他の方式としては、出力画像の色再現性を異ならしめる。そして、複数の工程でなる画像記録装置において、選択的に個々の工程を制御することによって偽造行為の防止を実現している。

【０００４】

【発明が解決しようとする課題】しかしながら、上述したいずれの方式の場合も、複写機、特に電子写真を前提に提案されたものであることから、近年、高画質化されているラインプリンタ、特にカラーインクジェットプリンタに対して有効な手段とは言い難い。その理由について、以下に、複写機の場合と対比して説明する。

【０００５】先ず、複写機では、画像読取りと画像記録に時間差があり、画像認識部での特定画像の有無の判別は、画像記録に先立って行うことができる。例えば、その時間差はスキャン回数が３回の場合、１回目（R（赤），G（緑），B（青）入力→C（シアン）出力）、２回目（R，G，B入力→M（マゼンタ）出力）、３回目（R，G，B入力→Y（イエロー）出力）となり、画像記録は面順次で行われている。画像認識部に対してはＲＧＢ点順次に入力されるので、最初の１回目、２回目で特定画像の有無を判別し、３回目のスキャン時に無効化処理、あるいは従来の他の偽造防止処理を実施することができる。

【０００６】一方、ラインプリンタにおいては、画像読取りと画像記録の間には時間差がなく、画像データが転送されてくるたびに画像を記録していく。具体的には、入力画像はＲＧＢ点順次で転送されてくる場合の例において、画像認識部および画像記録部は共に点順次で動作する。このような装置への従来技術の適用を考えた場合、画像認識部での特定画像の有無の判別と画像記録が同調しているため、たとえ特定画像の有無が判別できたとしても、その位置までの画像は記録されてしまうことになる。

【０００７】ここで、画像認識部としては、原稿上の色分布を点順次で画素毎に算出していき、所定割合に達したときに特定原稿有りと判別するようなものが例として挙げられる。あるいは、特定原稿の所定部位に着目して、注目画素とその周辺を参照することで、特徴抽出または分布から判別するものもある。

【０００８】また、画像認識と画像記録の時間差を確保するために所定画像をバッファリングすることが考えられる。例えば、１ページ分のメモリを設置したり、原稿の向きを考慮して最低限の容量のメモリ、つまり原稿の長手方向に対してデータを保持し得るメモリを用意する方式が考えられるが、データ量が非常に膨大なため装置が高価になるという問題がある。また、画像記録部への画像データの転送に先立ち、ドライバソフトまたはアプリケーションで画像認識を実施してしまうことも考えられるが、処理が非常に遅くなり、画像記録自体の生産性が極度に低下するという問題点がある。

【０００９】本発明は、上述した事情に鑑みてなされたものであり、その目的とするところは、画像認識部にて特定画像の有無の判別が行われた時点で、画像記録部で特定画像の一部ないしは全部が記録されてしまっている場合であっても、特定画像の偽造行為を効率的に防止し得る画像記録装置を提供することにある。

【００１０】

【課題を解決するための手段】本発明による画像記録装置は、画像データを入力する画像入力手段と、この画像入力手段から入力された画像データに対応した画像を記録媒体上に記録する画像記録手段と、画像入力手段から入力された画像データに対応する画像中に記録を禁止すべき特定画像が含まれているか否かを認識する画像認識手段と、この画像認識手段によって特定画像が含まれていると認識された場合に、画像記録手段によって記録媒体上に既に記録されている画像を無効化する無効化手段とを備える構成となっている。

【００１１】上記構成の画像記録装置において、画像認識手段にて特定画像の有無の判別が行われた時点で、画像記録手段によって特定画像の一部ないしは全部が記録媒体に記録されてしまっている場合であっても、無効化手段は、記録媒体上に記録済みの画像に対して無効化処理を施すことで、特定画像の偽造行為を未然に防止する。

【００１２】

【発明の実施の形態】以下、本発明の実施の形態について図面を参照しつつ詳細に説明する。なお、本実施形態では、インクジェットプリンタに適用した場合を例に採って説明するが、その他のラインプリンタやレーザプリンタ、あるいは画像記録装置を持つ装置・システム、例えば複写機やマルチプルプリンティングシステム、さらには、スキャナ・プリンタを組み合わせた複写システムにも適用できることは言うまでもない。

【００１３】図１は、本発明の第１実施形態に係る画像記録装置１０の構成を示すブロック図である。この第１実施形態に係る画像記録装置１０は、画像入力部１１、画像処理部１２、画像記録部１３、画像認識部１４、画像無効化部１５およびバックアップ電源１６を具備する構成となっている。

【００１４】この画像記録装置１０には、パーソナルコンピュータなどの外部装置（図示せず）から、画像データが転送されてくる。ここで、転送媒体としては、ＲＳ２３２－ＣやＵＳＢ、ＩＥＥＥ１２８４、ＩＥＥＥ１３９４、１００ＢＡＳＥ－Ｔあるいはローカルな規約の信号線などさまざまなインタフェースが考えられる。ここでは、詳細なプロトコルの説明は省略する。

【００１５】次に、上記構成の画像記録装置１０における各ブロックの具体的な構成について説明する。

【００１６】先ず、画像入力部１１は、プロトコルに対応した転送データの受け取りを担っている。ここでは、画像転送のプロトコルとしてＵＳＢを例に挙げて説明する。プリンタにおいては、データが保証されるバルク転送を使用することが一般的である。ＵＳＢの転送方式には他に、アイソクロナス転送やコンフィグレーションのためのコントロール転送があるが、ここではその説明を省略し、画像データが転送されるバルク転送のみを想定して説明する。

【００１７】バルク転送はトークンパケット、データパケットおよびハンドシェークパケットで構成され、画像データはデータパケットでシリアル転送される。図２は、ＵＳＢにおけるデータ転送の概要を説明する図である。基本フレーム中にバルク転送があり、さらに３つのパケットに分かれている。データパケットを詳細に分解すると、ＳＹＮＣ、ＰＩＤ、データ、ＣＲＣ１６、ＥＯＰになる。これをシリアルデータで示したものが最下段のデータ系列である。ＥＯＰはトランシーバーレベルで制御されている。

【００１８】カラー画像データの転送を実現するために、ここでは、ＲＧＢ点順次を前提に説明する。したがって、図２のデータパケットの中でデータ領域は、図３のようになる。当然のことながら、転送元でＲＧＢ→ＹＭＣ変換されてＹＭＣ点順次で送られてきたり、ＲＧＢ１ライン毎に送られるようなライン順次、さらにはＲＧＢ１ページ毎となる面順次であっても構わない。

【００１９】図４は、図２のデータパケットの中でデータ領域についてのシリアルーパラレル変換を行うシリアルーパラレル変換回路の回路例を示すブロック図である。この回路例では、ＲＧＢ点順次の８ビットのシリアルデータを、ＲＧＢ８ビットのパラレルデータに変換する構成となっている。

【００２０】具体的には、８ビットのシリアルデータをラッチする８個のＤ型フリップフロップ（以下、Ｄ－ＦＦと記す）２１-1～２１-8と、これらＤ－ＦＦ２１-1～２１-8の各ラッチ出力と、画像無効化部１５から供給される無効化信号とを２入力とする各色毎に８個のＯＲゲート２２Ｒ-1～２２Ｒ-8，２２Ｇ-1～２２Ｇ-8，２２Ｂ-1～２２Ｂ-8と、これらＯＲゲート２２Ｒ-1～２２Ｒ-8，２２Ｇ-1～２２Ｇ-8，２２Ｂ-1～２２Ｂ-8の各出力をラッチする各色毎に８個のＤ－ＦＦ２３Ｒ-1～２３Ｒ

-8，２３G-1～２３G-8，２３B-1～２３B-8と、クロックイネーブル信号を発生するクロックイネーブル発生器２４と、このクロックイネーブル発生器２４からクロックイネーブル信号が発生されたとき、クロック信号をD-FF２３R-1～２３R-8，２３G-1～２３G-8，２３B-1～２３B-8に供給するANDゲート２５R，２５G，２５Bとから構成されている。

【００２１】上記構成のシリアルーパラレル変換回路における動作タイミングは、図３のような形となる。また、RGBのパラレルデータ用D-FF２３R-1～２３R-8，２３G-1～２３G-8，２３B-1～２３B-8へのクロック信号は、RGBの各色データに対応するD-FF２３R-1～２３R-8，２３G-1～２３G-8，２３B-1～２３B-8に取り込むべく、クロックイネーブル発生器２４から発生されるクロックイネーブル信号によって適切に制御されている。

【００２２】次に、図１における画像処理部１２は、画像入力部１１から入力されてきた画像データを、記録媒体（図示せず）に記録するのに適した形式に変換する。例えば、入力画像がRGBのフルカラー画像の場合には、YMCのフルカラー画像に変換する。また、必要に応じて、YMCK（Kは黒）の４色や中間色調再現性の向上を目的として淡色YMCなどの追加としても良い。

【００２３】ここでは、RGB→YMC変換について具体的に説明する。変換の近似式の例として、式（１）が挙げられる。

【００２４】

【数１】

$$\begin{pmatrix} Y \\ M \\ C \end{pmatrix} = \begin{pmatrix} C11 & C12 & C13 \\ C21 & C22 & C23 \\ C31 & C32 & C33 \end{pmatrix} \begin{pmatrix} R \\ G \\ B \end{pmatrix} \quad \cdots (1)$$

【００２５】より忠実な変化が必要な場合には、式の複雑化ないしは３次元色空間からのLUT変換なども挙げられることは周知の事実である。画像処理部１２の具体的な構成の一例を図５に示す。これは、式（１）を展開したものである。

【００２６】すなわち、RGBの各データに係数C１１，C１２，C１３を掛ける乗算器３１R，３１G，３１Bと、RGBの各データに係数C２１，C２２，C２３を掛ける乗算器３２R，３２G，３２Bと、RGBの各データに係数C３１，C３２，C３３を掛ける乗算器３３R，３３G，３３Bと、乗算器３１R，３１G，３１Bの各乗算出力を加算する加算器３４と、乗算器３２R，３２G，３２Bの各乗算出力を加算する加算器３５と、乗算器３３R，３３G，３３Bの各乗算出力を加算する加算器３６と、これら加算器３４～３６の各出力と無効化信号とを２入力とするORゲート３７～３９とを有し、ORゲート３７～３９の各出力をYMCデータとして導出する構成となっている。

【００２７】画像処理部１２ではさらに、画像記録部１３に適した階調再現形式に補正したり、解像度形式やスクリーン生成あるいはスムージング処理などの各種処理も行われる。

【００２８】次に、図１における画像記録部１３は、画像処理部１２で変換された画像データに対応した画像を記録媒体に記録する。記録媒体は、具体的には、紙あるいはOHPシートまたは布などであり、これらは画像記録部１３の一部を構成する搬送部（図示せず）によって搬送される。

【００２９】画像記録部１３において、画像そのものの記録部位は、記録媒体の搬送方向に対して垂直方向に移動するものである。より具体的には、インクジェットプリンタにおいては、インクヘッドが例に挙げられる。したがって、画像記録部１３は画像そのものの記録部位と記録媒体の搬送部位が必須である。

【００３０】図６は、画像記録部１３の具体的な構成の一例を示すブロック図である。同図において、インクヘッド４１は、入力された画像データおよび画像同期信号に基づいて記録媒体（図示せず）に対する画像記録を実施する。ヘッド搬送制御部４２は、画像同期信号に基づいてインクヘッド４１を用紙搬送方向に対して垂直方向において順方向あいるは逆方向に移動させる。用紙搬送制御部４３は、画像同期信号に基づいて用紙を順方向あるいは逆方向に所定量だけ搬送する。

【００３１】図７は、各部位が同期して動作する際のタイミングを説明する図である。画素毎に入力される画像を、インクヘッド４１は順次記録動作し、ヘッド搬送制御部４２はこれに同期して用紙搬送方向に対して垂直方向に順次インクヘッド４１を１画素幅分だけ移動させる。そして、１ライン分の画像データの印字が終了すると、用紙搬送制御部４３は、用紙を１ライン幅分だけ移動させる。これらの動作中に各部位は、無効化信号に基づき、所定の無効化動作を実施するようになっている。

【００３２】なお、インクヘッド４１の画像記録は画素単位であるが、用紙方向に対して複数ライン同時に印字することにより、生産性を向上させるようにしても良い。つまり、インクヘッド４１のインクノズルが１列×n行（nは１以上の整数）に並べて構成されていることを指している。その場合の構成例を図８に示す。同図から明らかなように、用紙方向の画像データを保持する複数ライン分のラインバッファ４４を備え、複数ライン分の画像データを同時にインクヘッド４１に供給する構成となっている。

【００３３】図９は、図８の構成の画像記録部における動作のタイミングを説明する図である。このタイミング図に示すように、３ラインのインクヘッド処理、ヘッド搬送が行われ、３ライン毎に用紙の搬送が行われることになる。このように、用紙方向に対して複数ライン同時に印字することにより、画像記録動作の効率化が図れる

ことになる。

【００３４】次に、図１における画像認識部１４は、画像入力部１１から入力されてきた画像データの中に特定画像が存在するか否かを認識するものである。なお、本例では、画像入力部１１から入力された画像データを画像認識部１４に直接入力とする構成としたが、画像処理部１２で処理後の画像データを画像認識部１４に入力する構成であっても良い。

【００３５】図１０に、認識すべき対象画像（以下、認識対象画像と称す）の一例を示す。ここで、図１０に示す画像５０は入力画像であり、認識対象画像は図１０中の特定画像５１ａであるものとする。この認識対象画像５１ａは、図１１に示すように、複数（本例では、６つ）の部分画像５２-1～５２-6から構成されている。各部分画像５２-1～５２-6の形状は塗りつぶされた円であり、その色は部分画像５２-1と部分画像５２-2、部分画像５２-3と部分画像５２-4、部分画像５２-5と部分画像５２-6がそれぞれ同一の特定色となっている。

【００３６】また、ここでは、図１０に示すように、特定画像５１ａを図の時計回り方向に９０度、１８０度、２７０度それぞれ回転させて得られる特定画像５１ｂ，５１ｃ，５１ｄをも、特定画像５１ａと同様に認識対象画像とする。これらの特定画像５１ｂ，５１ｃ，５１ｄは、図１０から明らかなように、特定画像５１ａと共に入力画像５０に内包されている。

【００３７】図１２は、画像認識部１４の構成の一例を示すブロック図である。この画像認識部１４は、２値化部５３、２値画像データ選択部５４、特定画像部分判定部５５、フィルタリング部５６、サンプリング部５７、基準パターン部５８および特定画像判定結果出力部５９を有する構成となっている。

【００３８】ここで、画像認識部１４の各構成部分の具体的な処理内容について説明する。先ず、２値化部５３は、入力された画像データに対して予め設定された２値化処理を施すことによって部分画像の色を抽出するものであり、複数（本例では、４つ）の２値化部５３-1～５３-4を並列動作させることによって複数色に対応している。２値画像データ選択部５４は、２値化部５３から出力される複数の２値画像データに対して論理積あるいは論理和などの処理を行うことにより、複数の２値画像データのうちの少なくとも１つを選択し、その選択した少なくとも１つの２値画像データに基づく２値画像データを出力する。

【００３９】特定画像部分判定部５５は、２値画像データ選択部５４から出力される２値画像データに基づいて、特定画像の部分画像の有無をパターンマッチングによって判定する。フィルタリング部５６は、特定画像部分判定部５５から出力される２値画像データを入力とし、この２値画像データで表される２値画像中に連結有効画素領域が存在する場合には、当該連結有効画素領域

を１つの有効画素で代表させ、互いに連結していない有効画素からなる２値画像を表わす２値画像データを出力する。

【００４０】サンプリング部５７は、フィルタリング部５６から出力される２値画像データで表される２値画像を複数のブロックに分割し、ブロック毎に有効画素の有無を調べ、この結果に基づいて有効ブロック／無効ブロックの判定を行い、１ブロックを１単位とする２値画像データを出力する。具体的には、サンプリング部５７は、フィルタリング部５６から出力される２値画像データで表される２値画像上の４×４画素を１ブロックとし、１つのブロック中に１つでも有効画素（黒画素）が存在した場合に当該ブロックを有効ブロック（黒ブロック）とし、それ以外の場合には当該ブロックを無効ブロック（白ブロック）とする。

【００４１】基準パターン記憶部５８は、サンプリング部５７から出力される２値画像データを、特定画像判定結果出力部５９での認識判定処理に用いる基準パターンを記憶するものである。特定画像判定結果出力部５９は、サンプリング部５７から出力される２値画像データに基づいて、部分画像の配置状況をパターンマッチングなどで、基準パターン記憶部５８に予め格納されている対象画像との一致性を確認し、一致の度合いなどを認識結果として出力する。

【００４２】次に、図１における画像無効化部１５について説明する。この画像無効化部１５は、画像認識部１４の認識結果に基づいて、画像入力部１１、画像処理部１２あるいは画像記録部１３を制御し、図１３に示すように、全面無効化（ａ）または所定領域無効化（ｂ）の処理を行うことで、記録媒体上に既に記録されている特定画像を無効化する。この画像無効化部１５の構成の一例を図１４に示す。

【００４３】この例では、本画像記録装置１０を構成する各部、即ち図１における画像入力部１１、画像処理部１２および画像記録部１３に対して無効化信号を適宜供給する無効化部位選択部１５Ａが画像無効化部１５となり、予め設定された選択データを基に、画像入力部１１、画像処理部１２および画像記録部１３への無効化信号の供給を制御する構成となっている。

【００４４】なお、無効化方法が一意的に決定している場合は、画像処理部１２および画像記録部１３への無効化信号の供給を制御する必要がないことから、図１５のブロック図に示すように、画像無効化部は明示的に存在する必要はなく、画像入力部１１、画像処理部１２および画像記録部１３での無効化動作を制御できれば良いことは言うまでもない。

【００４５】また、画像無効化部１５は、画像認識部１４の認識結果（一致の度合い）に基づいて、完全な一致、あるいは、ある程度の一致のような段階を設けて、画像入力部１１、画像処理部１２および画像記録部１３

に対する無効化を選択的に実施することが可能である。

【００４６】なお、図１におけるバックアップ電源１６は、画像無効化部１５が無効化処理を開始する前に、既に記録済みの画像に対して無効化処理が実施されるのを阻止するために操作者が故意にメイン電源を切ったような場合への対処のために備えられたものであり、メイン電源から電力が供給されない場合でも、装置の動作を継続して実行させ、確実に無効化動作を遂行させることで、偽造行為を未然に防止する役割を担っている。

【００４７】次に、上記構成の第１実施形態に係る画像記録装置１０における画像無効化の動作について、無効化動作とプリント処理との関係を示す図１６を用いて説明する。

【００４８】図１６において、パーソナルコンピュータやワークステーションなどの転送元から特定画像を含んだ画像が転送されてくる（ａ）。ここで、ハッチングがかかっている部分が転送実施中の画像ラインである。なお、転送方式によっては、ある程度の画像ブロックとして転送されても良い。

【００４９】画像入力部１１では、転送データをプリンタ用にタイミングや画像データの配列を修正する（ｂ）。画像処理部１２では、入力された画像データを画素毎に処理する（ｃ）。画像記録部１３では、入力された画像データに対応する画像を順次所定の用紙へ記録していく（ｄ）。画像認識部１４は、これらの動作と並行して特定画像の有無の判定を実施する（ｅ）。

【００５０】この一連の流れにおいては、画像認識部１４での特定画素の有無の判定がなされる時点まで、たとえ特定画像が転送画像に存在していようとも用紙に記録されてしまう。そして、画像認識部１４で特定画像有りと判定され（ｆ）、その判定された時点での画像記録状況（ｇ）では、ほとんどの画像が出力されてしまっており、その時点では出力された画像は全て有効である。

【００５１】したがって、特定画像有りと判定された時点で、操作者が方向を逆にして再度プリント処理を実行し、先に出力した有効画像と、次に方向を逆にして出力した有効画像とを貼り合わせる行為を意図的に行った場合を想定すると、完全な特定画像が得られてしまうことになる。このような偽造行為をも防止するために、本実施形態では、画像無効化部１５によって既に記録された画像を無効化処理する（ｈ）ことで、特定画像の偽造を防止するようにしている。

【００５２】図１７に、画像記録部１３で実施可能な無効化動作の一例を示す。同図（ａ）では、用紙の搬送のみでインクヘッドは特定画像を判別した位置でキープし、印字動作のみを実行する。判別した位置が特定画像上であることから、必要最小限の動作で無効化が可能となる。同図（ｂ）では、用紙の搬送は行わず、インクヘッドを逆送させることで、画像の無効化を実施する。この場合には、印字方向が異なるだけで、速やかな無効化

処理を実現できる。なお、インクヘッドを逆送・順送とすることで、ライン方向全ての画像を無効化しても良い。

【００５３】同図（ｃ）では、用紙を全て戻して、インクヘッドをライン幅で逆搬送させて無効化を実施する。これにより、用紙そのものを完全に無効化することが可能となる。なお、画像はべた画像が適当であるが、所定線や文字を連続印字しても良い。同図（ｄ）では、用紙を所定量だけ戻して、インクヘッドをライン幅で逆搬送させて無効化を実施する。これは、特定画像がある可能性のある分だけの領域を無効化する。不必要な部分の印字を行わないことで、無効化処理にかかる時間を節約するとともに、インクや電力の無駄も省くことが可能となる。

【００５４】同図（ｅ）では、用紙を所定量だけ戻して、インクヘッドも所定幅での逆搬送を行うことで無効化を実施する。この場合には、ライン方向についても特定画像が存在する可能性のある部分のみに限定して動作させている。これにより、さらに無効化処理にかかる時間を節約し、かつインクや電力の無駄を省くことが可能となる。同図（ｆ）では、用紙の戻しとインクヘッドの逆搬送を同時に実行させる。これにより、より短い時間で無効化が可能となるため、インクや電力の無駄を省けることは言うまでもなく、操作者からの無効化処理に対する妨害はより困難となる。

【００５５】なお、操作者からの妨害を防止すべく、さらなる高速化を考えて、用紙搬送速度およびインクヘッド移動速度を上げることが考えられる。この際、インクヘッドの印字処理は通常間隔で行われるため、図１８（ａ）に示すように、点線状に画像が記録されることから、単なる汚れなどと見なされる可能性があり、無効化が十分になされない虞れがある。これに対応するために、インクヘッドの印字処理をより高速に行うようにすることで、図１８（ｂ）に示すように、特定画像に対する無効化処理が確実になされる。ここで、インクヘッドを高速印字することでの印字品質の低下は問題ではなく、べた画像、線画が記録されれば操作者からの妨害を防止するという機能としては十分である。

【００５６】ところで、無効化画像の生成については、図１の画像処理部１２で実現している。非常に簡単な例としてはべた黒である。これは、画像無効化部１から供給される無効化信号により、図４で３色全てのデータを“ＦＦｈｅｘ”とすることで黒データが生成される。なお、装置の簡素化およびインクや電力の節約などのため、無効化の際に１色のインクヘッドで無効化することが考えられる。例えば、シアンＣのみの場合は図４での回路はシアンＣのみのマスクとなる。また、無効化時のインクの使用量を平均化するために無効化処理の実施毎に無効化で使用するインクの種類を変えても良い。

【００５７】また、所定文字あるいは所定画像を生成し

て、これらを無効化画像としても良い。図１９は、画像処理部１２に無効化画像生成部６０を追加した場合のブロック図であり、図中、図５と同等部分には同一符号を付して示してある。同図において、無効化画像生成部６０は、無効化信号に応答して無効化画像を生成し、セレクタ６１，６２，６３の各一方の入力とする。

【００５８】セレクタ６１，６２，６３は、加算器３４，３５，３６の各出力を各他方の入力とし、無効化信号が与えられたときに、通常の画像（加算器３４，３５，３６の各出力）に代えて、無効化画像生成部６０からの無効化画像を出力するようになっている。図２０に、図１７（ｅ）の無効化印字手順を使用した際において、無効化のために警告画像を印字した例を示す。このように、所定線画あるいは文字で構成される警告画像を無効化画像として記録することで、べた画像を記録する場合に比べてより高速な記録によって無効化の速やかな実施が可能となる。

【００５９】なお、本例では、無効化画像の生成を画像処理部１２で実施するとしたが、画像記録部１３で実施するようにしても良い。これは、インクヘッドのダイレクト同時印字の場合に、一旦、バッファリングした画像がヘッドに送られるため、画像処理部１２で無効化画像を供給しても、即座にインクヘッドに供給することが困難なためである。インクヘッドとバッファの間で無効化画像を挿入することで、これを[illegible]。

【００６[illegible]
施する[illegible]
での処理と[illegible]
[illegible]に当り、画像の全体あるいは[illegible]を認識すること[illegible]示すように、特定画像の[illegible]方向の長さのライン[illegible]バッファないしは[illegible]要とな[illegible]

[illegible]画像記録部[illegible]において行うものであり、[illegible]千円札を考えると、約１２ｃｍが長手方向の寸法であるから、４００ｄｐｉ（＝１６ｄｏｔ／ｍｍ）プリンタを想定すると、１９２０ラインとなる。４００ｄｐｉでのＡ４横画像記録幅に相当するドット数は５０００ｄｏｔあれば十分であるので、フルカラー８ｂｉｔデータでは、８ｂｉｔ（１Ｂｙｔｅ）×３色×５０００×１９２０＝２８，８００，０００Ｂｙｔｅも必要となり、装置が高価になってしまうため、得策とはいえない。

【００６２】ただし、無効化画像の印字動作を最小限にするためにコスト的に許す範囲でのラインバッファあるいはメモリ１７を使用して互いに補い合うことで、装置の無効化処理をより効率化することは可能である。すなわち、記録画像のバッファリングによって画像認識部１４での処理と画像記録部１３での処理との間に時間差を

生じさせることにより、特定画像の記録を極力抑えることが可能となり、既に記録された部分も少ないため、無効化処理を迅速に行うことが可能となる。

【００６３】また、本実施形態の変形例として、特定の操作者あるいはパスワードで管理された操作者のみが、無効化を解除できる機能を付加する構成も可能である。すなわち、図２２のブロック図に示すように、無効化を解除する無効化解除部１８を設け、特定の操作者あるいはパスワードで管理された操作者のみが、この無効化解除部１８を通して無効化を解除できるようにする。

【００６４】[illegible]により、製品の開発段階における作業の効率化が可能となる。例えば、まだ画像認識部１４の性能が十分出ていない場合において、特定画像以外の画像について[illegible]に誤検出することが考えられ、画像記録装置の動作[illegible]証に支障を来す虞れがある。ところが、[illegible]、無効化を解除できる機能を付加す[illegible]画像認識部１４の故障や不測な事態に対し、[illegible]を回復することが可能となる。なお、開[illegible]場合には、無効化解除を[illegible]は[illegible]ない。

[illegible]また、これら無効化に必要なブロックを故[illegible]攻要されないようにするために、図１[illegible]ロック[illegible]特[illegible]号にＣＰＵなどで確認をとる[illegible]無いかを確認し、変更[illegible]つ、ないしは複数[illegible]可能である。具体的[illegible]そのもの[illegible]止し、記録動作ができ[illegible]操作者の意図的な改造を制限[illegible]定[illegible]することが可能となる。

【００６６】[illegible]、ラインプリンタに適用した[illegible]例[illegible]が、ライン方向の記録と[illegible]同じである。例えば[illegible]ン方向[illegible]作は、レーザープリ[illegible]当し、[illegible]に示すような全面無効化（[illegible]）や[illegible]定領域無効化（ｂ）の動作は可能である。

【００[illegible]７】[illegible]体である用紙の搬送[illegible]中間転写体を逆送することに[illegible]効化処[illegible]施できる。特に、感光体や中間[illegible]体[illegible]ては、前[illegible]画像であるので、このままクリーニング[illegible]セスを実行し、媒体上の静電画像を消去してしまうことで、操作者に見えない状態で特定画像を無効化して偽造行為を防止することが可能となる。

【００６８】図２３は、本発明の第２実施形態に係る画像記録装置７０の構成を示すブロック図である。この第２実施形態に係る画像記録装置７０は、画像入力部７１、画像処理部７２、画像記録部７３、画像認識部７４、画像無効化部７５、バックアップ電源７６および媒

体損傷部７７を具備する構成となっている。この構成において、各ブロックの構成および作用は、図１の対応する各ブロックのそれと基本的に同じであり、ここでは、新たに付加された媒体損傷部７７についてのみ説明するものとする。

【００６９】媒体損傷部７７は、画像認識部７４で特定画像有りと判断され、無効化の指示がなされた場合に、既に記録済みの媒体に対してパンチなどで穴をあけたり、熱ヘッドなどで記録媒体の全面あるいは一部を焼却したり、シュレッダなどで細断し、記録媒体そのものを損傷させることによって無効化を実現し、特定画像の記録済みの記録媒体の流通を阻止することで偽造を防止するようにする。

【００７０】図２４は、媒体損傷部７７の具体例を示す概略構成図である。同図（ａ）は、パンチあるいは熱ヘッド８１をインクヘッド８２に併設した構成のものである。この構成の場合における損傷実行時の動作は、図１６に示したインクヘッドの動作に準じたものである。その結果、図２５（ａ）に示すように、媒体は損傷される。また、図２４（ｂ）は、シュレッダあるいはパンチ８３を設置した構成のものである。この構成の場合には、用紙の逆送のみで損傷処理を実行する。その結果、図２５（ｂ）に示すように、媒体は損傷される。

【００７１】

【発明の効果】以上説明したように、画像認識手段にて特定画像の有無の判別が行われた時点で、画像記録手段にて特定画像の一部ないしは全てが記録されてしまう画像記録装置において、記録媒体上に記録済みの画像に対して無効化処理を施すようにしたことにより、高速かつ安価にて、特定の画像の偽造行為を効率的に防止することが可能となる。

【図面の簡単な説明】

【図１】　本発明の第１実施形態に係る画像記録装置の構成を示すブロック図である。

【図２】　ＵＳＢにおけるデータ転送の概要を説明する図である。

【図３】　ＵＳＢにおけるデータ領域を説明する図である。

【図４】　画像入力部におけるシリアルーパラレル変換回路の回路例を示すブロック図である。

【図５】　画像処理部の具体的な構成の一例を示すブロック図である。

【図６】　画像記録部の具体的な構成の一例を示すブロック図である。

【図７】　画像記録部の各部位が同期して動作する際のタイミングを説明する図である。

【図８】　１×ｎのインクヘッドを備えた画像記録部の構成例を示すブロック図である。

【図９】　１×ｎのインクヘッドを備えた画像記録部における動作のタイミングを説明する図である。

【図１０】　認識すべき対象画像の一例を示す図である。

【図１１】　認識すべき対象画像の拡大図である。

【図１２】　画像認識部の構成の一例を示すブロック図である。

【図１３】　無効化画像記録の概念図である。

【図１４】　画像無効化部の構成の一例を示すブロック図である。

【図１５】　画像無効化部が明示的に存在しない場合の構成を示すブロック図である。

【図１６】　無効化動作とプリント処理との関係を説明する図である。

【図１７】　画像記録部で実施可能な無効化の動作例を示す図である。

【図１８】　インクヘッド印字処理を高速化する場合の無効化画像を説明する図である。

【図１９】　画像処理部の他の構成例を示すブロック図である。

【図２０】　警告画像を印字した例を示す図である。

【図２１】　メモリを備えた場合の構成例を示すブロック図である。

【図２２】　無効化解除部を備えた場合の構成例を示すブロック図である。

【図２３】　本発明の第２実施形態に係る画像記録装置の構成を示すブロック図である。

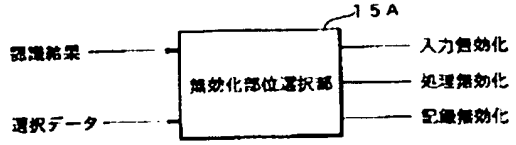
【図２４】　媒体損傷部の具体例を示す概略構成図である。

【図２５】　媒体の損傷例を示す図である。

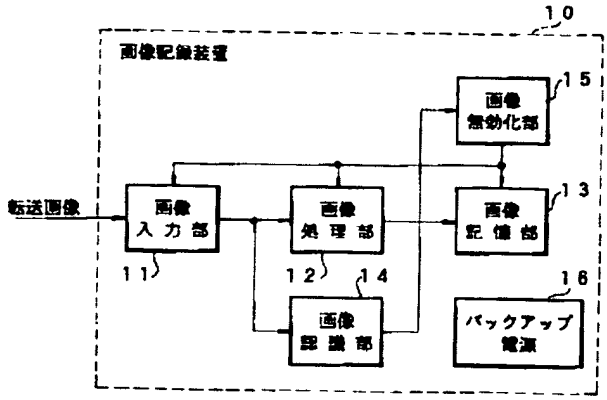
【符号の説明】

１０，１０′，７０…画像記録装置、１１，７１…画像入力部、１２，７２…画像処理部、１３，７３…画像記録部、１４，７４…画像認識部、１５，７５…画像無効化部、１６，７６…バックアップ電源、１８…無効化解除部、７７…媒体損傷部

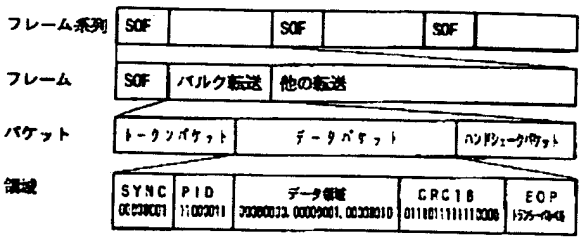
【図１４】



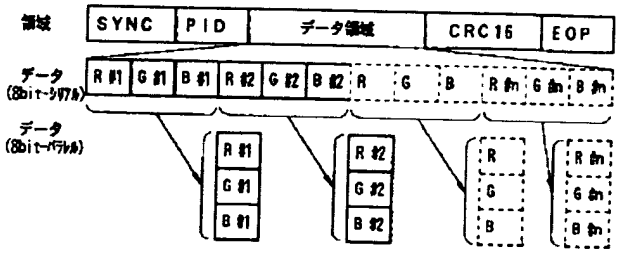
【図１】



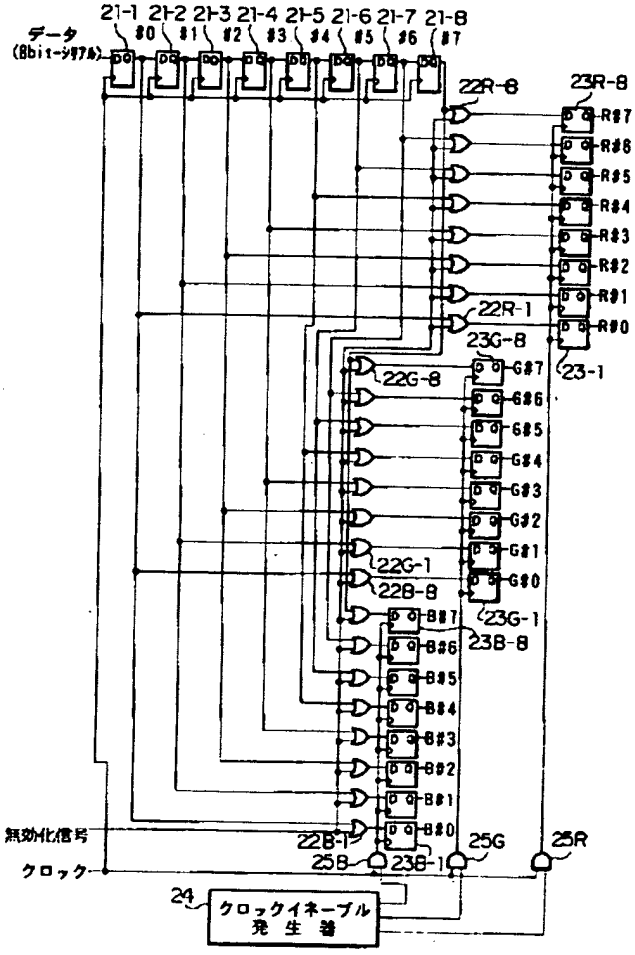
【図２】



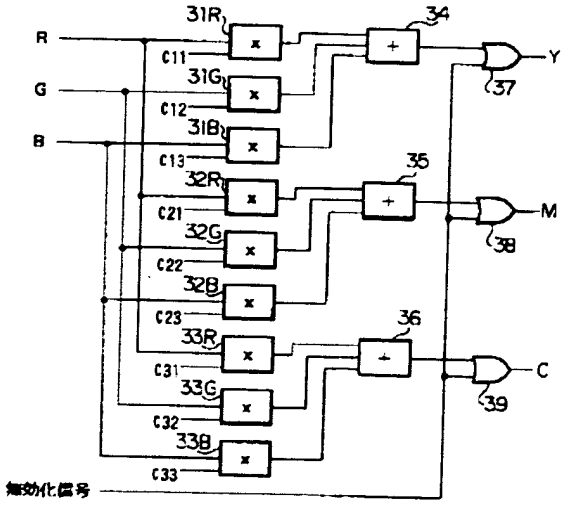
【図３】



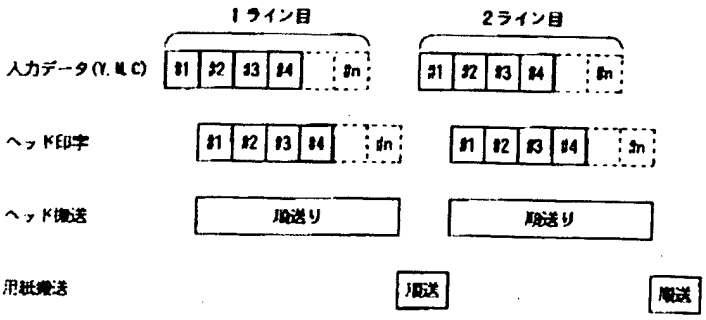
【図４】



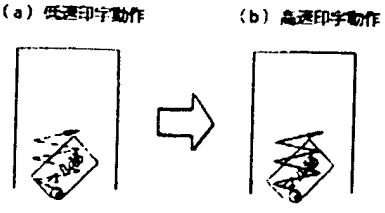
【図５】



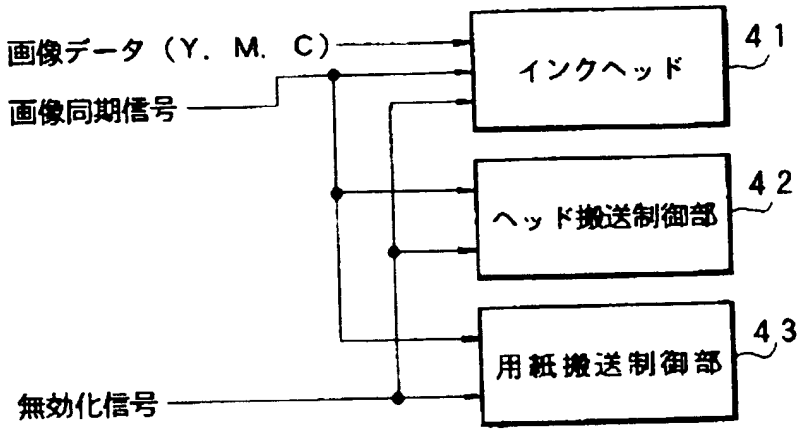
【図７】



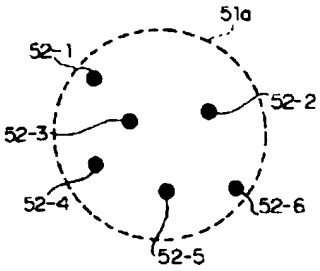
【図１８】



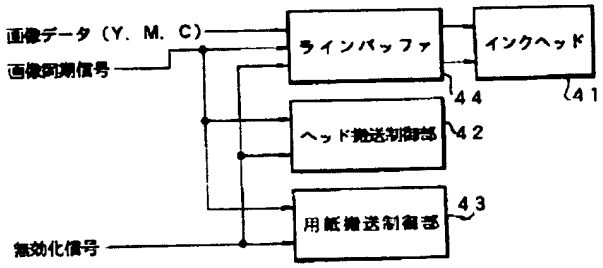
【図６】



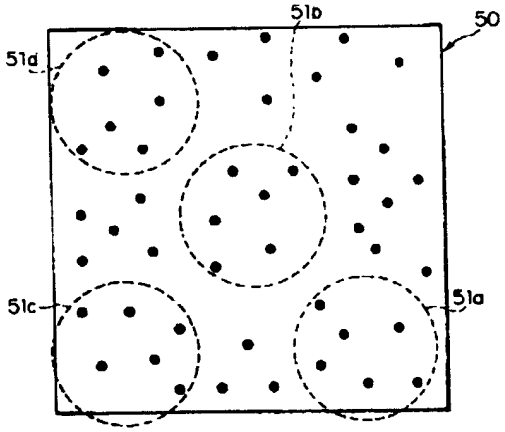
【図１１】



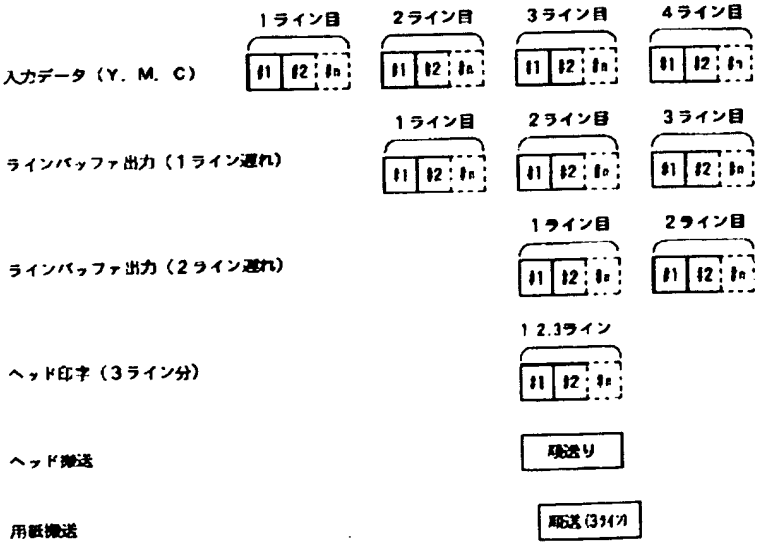
【図８】



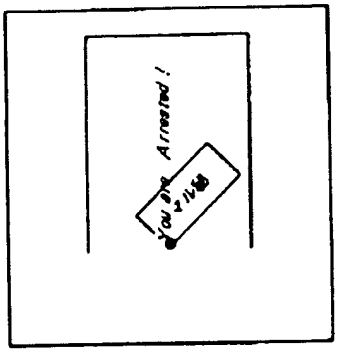
【図１０】



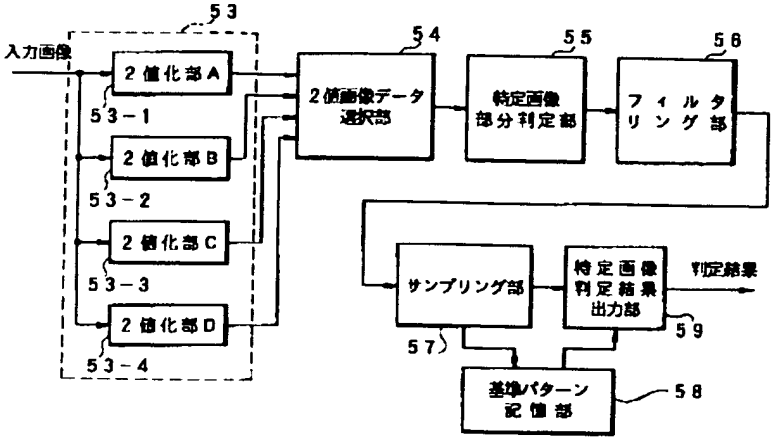
【図９】



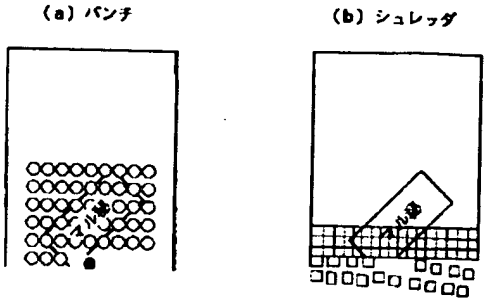
【図２０】



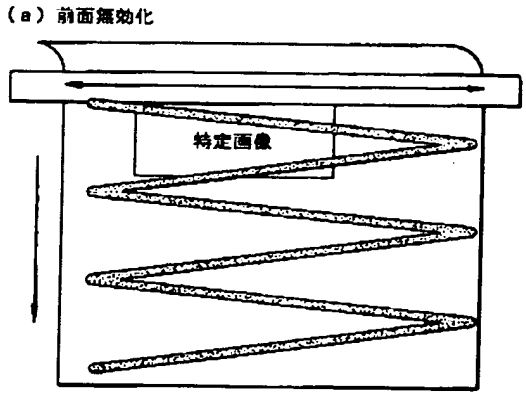
【図１２】



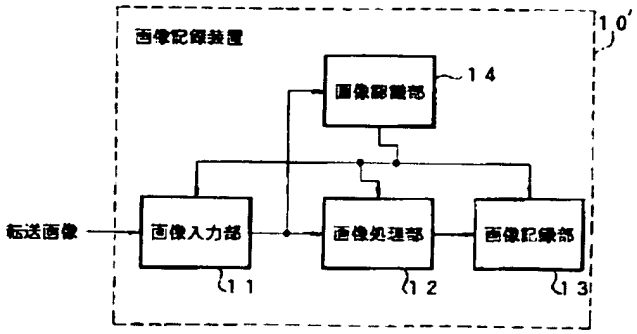
【図２５】



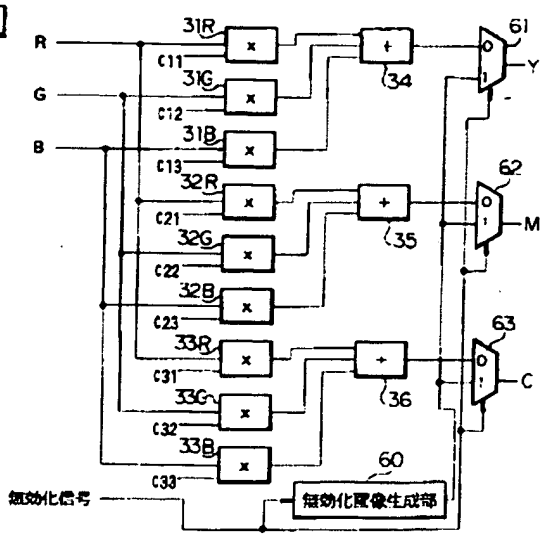
【図１３】



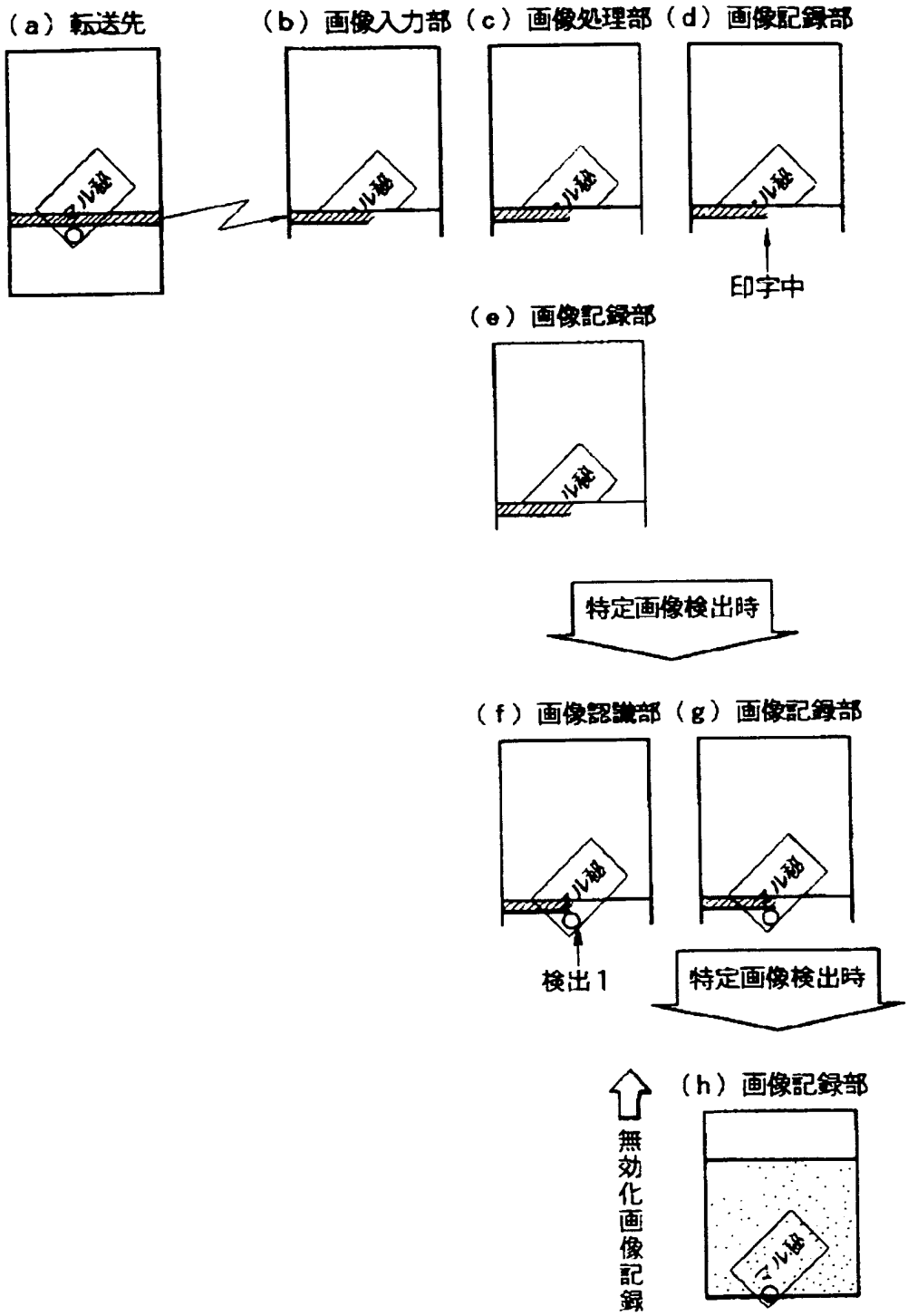
【図１５】



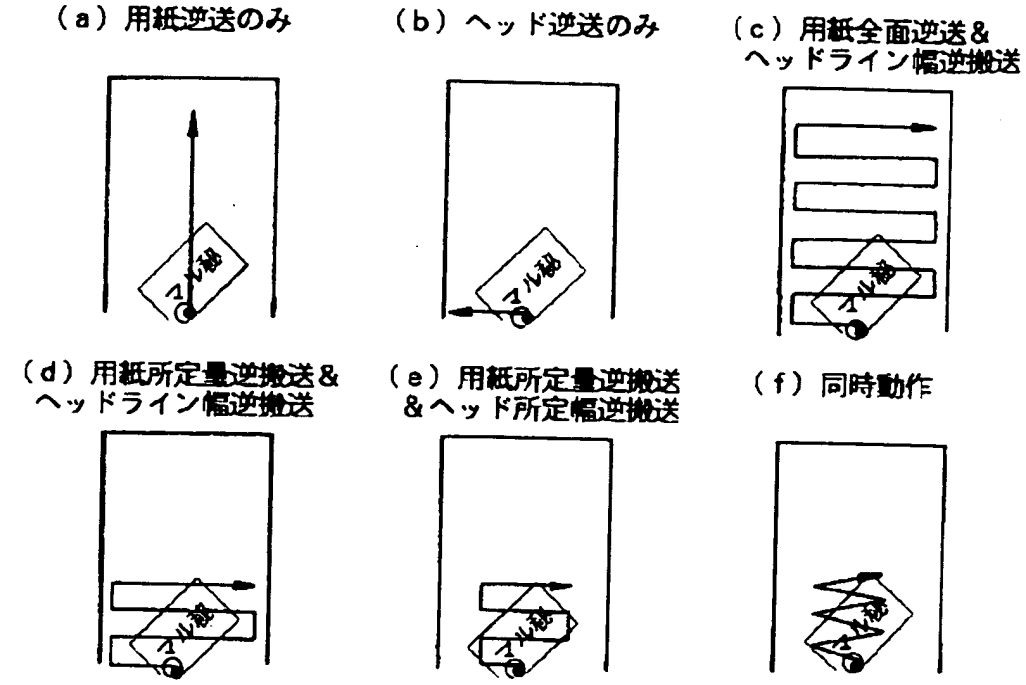
【図１９】



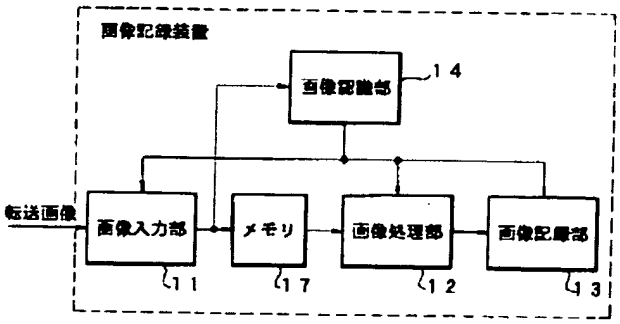
【図１６】


（ａ）転送先
（ｂ）画像入力部
（ｃ）画像処理部
（ｄ）画像記録部
印字中
（ｅ）画像記録部
特定画像検出時
（ｆ）画像認識部
（ｇ）画像記録部
検出１
特定画像検出時
（ｈ）画像記録部
無効化画像記録

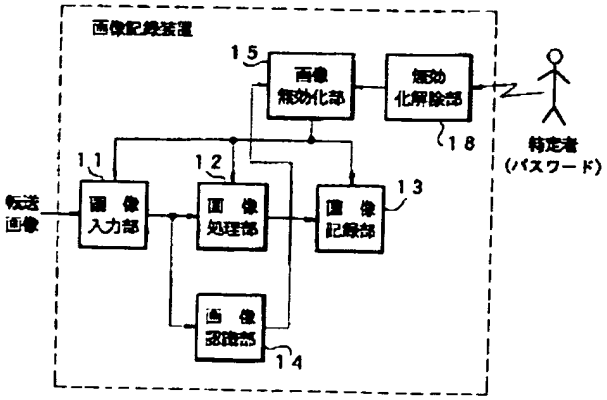
【図１７】



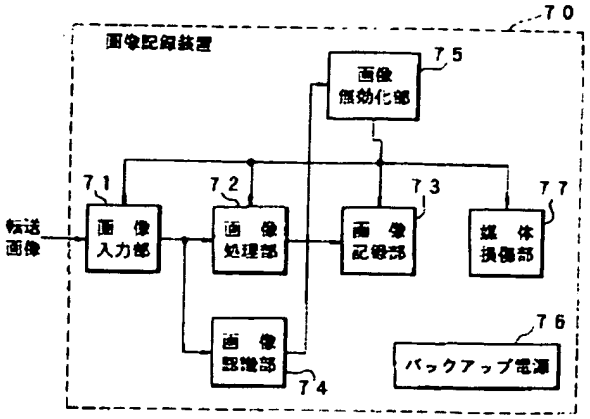
【図２１】



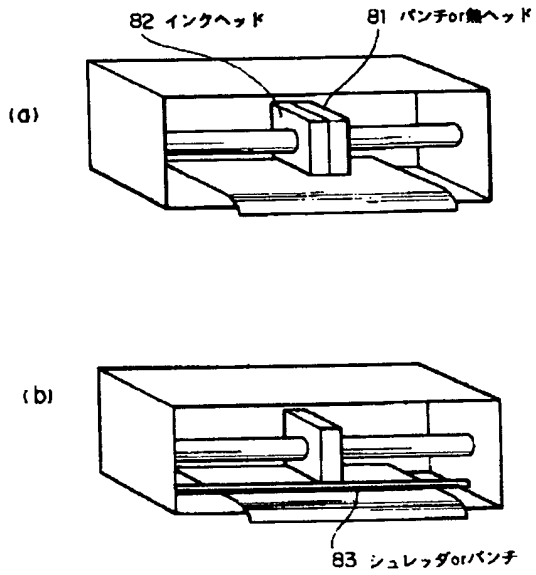
【図２２】



【図２３】



【図２４】



フロントページの続き

(72) 発明者　深澤　和美
神奈川県海老名市本郷2274番地　富士ゼロックス株式会社海老名事業所内
(72) 発明者　赤松　学
神奈川県海老名市本郷2274番地　富士ゼロックス株式会社海老名事業所内

Ｆターム(参考)　2C061 AP04 AP07 AQ05 AQ06 AR01
AS13 HH06 HH11 HH13 HJ02
HJ05 HJ06 HJ10 HK11 HN05
HN15 HQ20 HQ21
2H034 FA01
2H113 AA05 BA18 BA31 BB02 BB06
BB08 BB22 CA39 CA40 FA00

CLAIMS

[Claim(s)]
[Claim 1] An image input means to input image data, and an image recording means to record the image corresponding to the image data inputted from said image input means on a record medium, An image recognition means to recognize whether the specific image which should forbid record into the image corresponding to the image data inputted from said image input means is contained, Image recording equipment characterized by having a nullification means to cancel the image already recorded on said record medium by said image recording means when recognized as said specific image being contained by said image recognition means.
[Claim 2] Said image recording means is image recording equipment according to claim 1 characterized by recording at a time the image of one line corresponding to the image data inputted from said image input means on a record medium.
[Claim 3] Said nullification means is image recording equipment according to claim 1 or 2 characterized by recording a nullification image in piles on a record medium [finishing / record].
[Claim 4] Said nullification means is image recording equipment according to claim 1, 2, or 3 characterized by only for all or the amount of predetermined parts making a record medium backward feed, and recording a nullification image.
[Claim 5] Said nullification means is image recording equipment according to claim 1, 2, or 3 characterized by only for all or the amount of predetermined parts making said image recording means backward feed or pass in the direction of Rhine around, and recording a nullification image.
[Claim 6] Said nullification means is image recording equipment according to claim 1, 2, or 3 characterized by usually operating said

image recording means at a high speed rather than the time of record, and recording a nullification image.

[Claim 7] Said nullification image is image recording equipment according to claim 1, 2, or 3 characterized by being the poor image of a total color or monochrome.

[Claim 8] Said nullification image is image recording equipment according to claim 1, 2, or 3 characterized by being the warning image which consists of a predetermined line drawing or an alphabetic character.

[Claim 9] Said nullification means is image recording equipment according to claim 1 or 2 characterized by being a medium damage means to do damage to a record medium [finishing / record].

[Claim 10] Image recording equipment according to claim 1 or 2 characterized by controlling or suspending the image recording actuation itself when one or more are deleted or permuted among said image input means, said image recording means, said image recognition means, and said nullification means.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to image recording equipment equipped with the function to prevent the forged action of specific images, such as a bill, and negotiable securities or a secret document, especially, about the image recording equipment which records the image corresponding to input image data on a record medium.
[0002]
[Description of the Prior Art] image recording equipment -- setting -- the former, a bill, negotiable securities, or Mull -- a secret incantation -- a purpose [prevent / the forged action of specific images, such as writing,] -- carrying out -- the inside of an input image -- a bill, negotiable securities, or Mull -- a secret incantation -- it checked whether specific images, such as writing, would exist, and when it was judged that a specific image exists, it was coped with by performing predetermined processing. As the mode of processing, various methods are proposed conventionally.
[0003] Image output actuation is stopped or forbidden as one of the method of the. A nullification image is outputted as other methods. The color reproduction nature of an output image is made to differ as a method of further others. And in the image recording equipment which becomes at two or more processes, prevention of a forged action is realized by controlling each process alternatively.
[0004]
[Problem(s) to be Solved by the Invention] However, since it is proposed on the assumption that a copying machine, especially electrophotography, in recent years, it is hard to call it an effective

means in [any] the method mentioned above to the line printer high-definition-ized, especially a color ink jet printer. The reason is explained below as contrasted with the case of a copying machine.

[0005] First, in a copying machine, time difference is in image read and image recording, and distinction of the existence of the specific image in the image recognition section can be performed in advance of image recording. For example, the time difference becomes the 1st time (R (red), G (green), B (blue) input ->C (cyanogen) output), the 2nd time (R, G, B input ->M (Magenta) output), and the 3rd time (R, G, B input ->Y (yellow) output), when the count of a scan is 3 times, and image recording is performed by Junji Men. the image recognition section -- receiving -- a RGB dot order -- since it is inputted into a degree, the existence of a specific image can be distinguished by the 1st time of the beginning, and the 2nd time, and nullification processing or other conventional forged prevention processings can be carried out at the time of the 3rd scan.

[0006] On the other hand, in the line printer, there is no time difference between image read and image recording, and whenever image data is transmitted, the image is recorded. concrete -- an input image -- a RGB dot order -- the example in the case of next being transmitted -- setting -- the image recognition section and the image recording section -- both -- a dot order -- next, it operates. Even if it is able to distinguish the existence of a specific image since distinction and image recording of the existence of the specific image in the image recognition section are aligning when application of the conventional technique to such equipment is considered, the image to the location will be recorded.

[0007] Here, as the image recognition section, the color distribution on a manuscript is computed for every pixel by point sequential, and when a predetermined rate is reached, what is distinguished from those with a specific manuscript is mentioned as an example. Or paying attention to the predetermined part of a specific manuscript, there are some which are distinguished from a feature extraction or distribution by referring to an attention pixel and its circumference.

[0008] Moreover, in order to secure image recognition and the time difference of image recording, it is possible to buffer a predetermined image. For example, although the memory for 1 page can be installed or the method which prepares the memory of a minimum capacity, i.e., the memory which can hold data to the longitudinal direction of a manuscript, can be considered in consideration of the sense of a

manuscript, since the amount of data is very huge, there is a problem that equipment becomes expensive. Moreover, although carrying out image recognition with driver software or application is also considered in advance of the image data transfer to the image recording section, processing becomes very slow and there is a trouble that the productivity of the image recording itself falls to the degree of pole.
[0009] The place which this invention is made in view of the situation mentioned above, and is made into the purpose is to offer the image recording equipment which can prevent the forged action of a specific image efficiently, even if it is the case where some or all of a specific image is recorded in the image recording section, when distinction of the existence of a specific image is performed in the image recognition section.
[0010]
[Means for Solving the Problem] An image input means by which the image recording equipment by this invention inputs image data, An image recording means to record the image corresponding to the image data inputted from this image input means on a record medium, An image recognition means to recognize whether the specific image which should forbid record into the image corresponding to the image data inputted from the image input means is contained, When recognized as the specific image being contained by this image recognition means, it has composition equipped with a nullification means to cancel the image already recorded on the record medium by the image recording means.
[0011] In the image recording equipment of the above-mentioned configuration, when distinction of the existence of a specific image is performed by the image recognition means, even if it is the case where some or all of a specific image is recorded on the record medium by the image recording means, a nullification means is performing nullification processing to an image [finishing / record] on a record medium, and prevents the forged action of a specific image beforehand.
[0012]
[Embodiment of the Invention] Hereafter, it explains to a detail, referring to a drawing about the gestalt of operation of this invention. In addition, although this operation gestalt takes and explains the case where it applies to an ink jet printer to an example, it cannot be overemphasized that it is applicable also to a process defined system with other line printers, laser beam printers, or image recording equipment, for example, a copying machine and a multiple printing system, and the copy system which combined the scanner printer further.

[0013] Drawing 1 is the block diagram showing the configuration of the image recording equipment 10 concerning the 1st operation gestalt of this invention. The image recording equipment 10 concerning this 1st operation gestalt has the composition of providing the image input section 11, the image-processing section 12, the image recording section 13, the image recognition section 14, the image nullification section 15, and a backup power supply 16.
[0014] Image data is transmitted to this image recording equipment 10 from external devices (not shown), such as a personal computer. Here, as a transfer medium, various interfaces, such as RS232-C, USB, IEEE 1284, IEEE1394, 100BASE-T, or a signal line of local agreement, can be considered. Here, explanation of a detailed protocol is omitted.
[0015] Next, the concrete configuration of each block in the image recording equipment 10 of the above-mentioned configuration is explained.
[0016] First, the image input section 11 is bearing the reception of the transfer data corresponding to a protocol. Here, as a protocol of an image transfer, USB is mentioned as an example and explained. In a printer, it is common to use the bulk transfer to which data are guaranteed. Although the transmittal mode of USB has an isochronous transfer and the other control transfer for a configuration, the explanation is omitted here and it explains only supposing the bulk transfer to which image data is transmitted.
[0017] A bulk transfer consists of a token packet, a data packet, and a handshake packet, and serial transmission of the image data is carried out by the data packet. Drawing 2 is drawing explaining the outline of the data transfer in USB. A bulk transfer is in a basic frame and it is divided into three more packets. It will be set to SYNC, PID, data, and CRC16 and EOP if a data packet is decomposed into a detail. It is the data sequence of the bottom which showed this with serial data. EOP is controlled by transceiver level.
[0018] in order to realize a color picture data transfer -- here -- a RGB dot order -- it explains on the assumption that a degree. Therefore, a data area becomes like drawing 3 in the data packet of drawing 2 . with a natural thing, RGB->YMC conversion is carried out by the source -- having -- a YMC dot order -- Rhine which is sent next or is sent for every RGB of one line -- you may be Junji Men who becomes every one-page RGB further one by one.
[0019] Drawing 4 is the block diagram showing the example of a circuit of the serial-parallel conversion circuit which performs serial-parallel

conversion about a data area in the data packet of drawing 2 . this example of a circuit -- a RGB dot order -- it has the composition of changing the 8-bit serial data as follows into parallel data of 8 bits of RGB.

[0020] Eight D type flip-flops 21-1 to 21-8 which specifically latch 8-bit serial data (it is hereafter described as D-FF), Eight OR-gate 22R-1-22R-8 per color which considers each latch output of these D-FF 21-1 to 21-8, and the nullification signal supplied from the image nullification section 15 as two inputs, 22G-1 - 22 G-8, and 22B-1-22B-8, These OR-gate 22R-1-22R-8, 22G-1 - 22 G-8, eight D-FF23R-1-23R-8 per color which latches each output of 22B-1-22B-8, 23G-1 - 23 G-8, and 23B-1-23B-8, When a clock enable signal is generated from the clock enabling generator 24 which generates a clock enable signal, and this clock enabling generator 24, It consists of the AND gates 25R, 25G, and 25B which supply a clock signal to D-FF23R-1-23R-8, 23G-1 - 23 G-8, and 23B-1-23B-8.

[0021] The timing of operation in the serial-parallel conversion circuit of the above-mentioned configuration serves as a form like drawing 3 . moreover, D-FF23R-1-23R- for parallel data of RGB -- 8 and 23 -- D-FF23R-1-23 corresponding to each color data of RGB in the clock signal of G-1 - 23 G-8, and 23B-1-23B-8 -- it is appropriately controlled by the clock enable signal generated from the clock enabling generator 24 in order to incorporate to R-8, 23G-1 - 23 G-8, and 23B-1-23B-8.

[0022] Next, the image-processing section 12 in drawing 1 changes the image data inputted from the image input section 11 into the format suitable for recording on a record medium (not shown). For example, when an input image is a full color image of RGB, it changes into the full color image of YMC. Moreover, it is good also as an addition of light color YMC etc. if needed for the purpose of improvement in four colors of YMCK (K is black), or neutral-colors tone repeatability.

[0023] Here, RGB->YMC conversion is explained concretely. A ceremony (1) is held as an example of the approximate expression of conversion.

[0024]

[Equation 1]

$$\begin{bmatrix} Y \\ M \\ C \end{bmatrix} = \begin{bmatrix} C11 & C12 & C13 \\ C21 & C22 & C23 \\ C31 & C32 & C33 \end{bmatrix} \begin{bmatrix} R \\ G \\ B \end{bmatrix} \quad \cdots (1)$$

[0025] When a more faithful change is required, it is a well-known fact

that complication of a formula or the LUT conversion from a three-dimension color space is mentioned. An example of the concrete configuration of the image-processing section 12 is shown in drawing 5 . This develops a formula (1).

[0026] Namely, the multipliers 31R, 31G, and 31B which hang a coefficient C 11, and C12 and C13 on each data of RGB, The multipliers 32R, 32G, and 32B which hang a coefficient C 21, and C22 and C23 on each data of RGB, The multipliers 33R, 33G, and 33B which hang a coefficient C 31, and C32 and C33 on each data of RGB, The adder 34 adding each multiplication output of Multipliers 31R, 31G, and 31B, The adder 35 adding each multiplication output of Multipliers 32R, 32G, and 32B, It has the OR gates 37-39 which consider the adder 36 adding each multiplication output of Multipliers 33R, 33G, and 33B, and each output and nullification signal of these adders 34-36 as two inputs, and has composition which derives each output of the OR gates 37-39 as YMC data.

[0027] In the image-processing section 12, it amends further in the gradation reappearance format of having been suitable for the image recording section 13, or various processings, such as a resolution format, and screen generation or smoothing processing, are also performed.

[0028] Next, the image recording section 13 in drawing 1 records the image corresponding to the image data changed in the image-processing section 12 on a record medium. A record medium is specifically paper, an OHP sheet, or cloth, and these are conveyed by the conveyance section (not shown) which constitutes a part of image recording section 13.

[0029] In the image recording section 13, it moves perpendicularly to the conveyance direction of a record medium in the record part of the image itself. More specifically in an ink jet printer, an ink head is mentioned as an example. Therefore, the image recording section 13 has the record part of the image itself, and the indispensable conveyance part of a record medium.

[0030] Drawing 6 is the block diagram showing an example of the concrete configuration of the image recording section 13. In this drawing, the ink head 41 carries out image recording over a record medium (not shown) based on the image data and image synchronizing signal which were inputted. Based on an image synchronizing signal, forward direction ****** moves [in / to the form conveyance direction / for the ink head 41 / a perpendicular direction] the head transfer-control section 42 to

hard flow. The form transfer-control section 43 conveys a form only for the specified quantity to the forward direction or hard flow based on an image synchronizing signal.

[0031] Drawing 7 is drawing explaining the timing at the time of at least each part synchronizing and operating. The ink head 41 carries out sequential record actuation of the image inputted for every pixel, and the head transfer-control section 42 moves the ink head 41 perpendicularly by 1-pixel width of face one by one to the form conveyance direction synchronizing with this. And after printing of the image data for one line is completed, the form transfer-control section 43 moves a form by one-line width of face. Each part carries out predetermined nullification actuation based on a nullification signal during these actuation.

[0032] In addition, although the image recording of the ink head 41 is a pixel unit, you may make it raise productivity by printing to two or more line coincidence to page orientation. That is, it has pointed out that the ink nozzle of the ink head 41 arranges to 1 train xn line (n is one or more integers), and is constituted. The example of a configuration in that case is shown in drawing 8 . It has the line buffer 44 for two or more lines holding the image data of page orientation, and has composition which supplies the image data for two or more lines to coincidence at the ink head 41 so that clearly from this drawing.

[0033] Drawing 9 is drawing explaining the timing of the actuation in the image recording section of the configuration of drawing 8 . As shown in this timing chart, ink head processing of three lines and head conveyance will be performed, and conveyance of a form will be performed every three lines. Thus, the increase in efficiency of image recording actuation can be attained by printing to two or more line coincidence to page orientation.

[0034] Next, the image recognition section 14 in drawing 1 recognizes whether a specific image exists in the image data inputted from the image input section 11. In addition, although the image data inputted from the image input section 11 was considered as the configuration which considers as a direct input at the image recognition section 14 in this example, you may be the configuration of inputting the image data after processing into the image recognition section 14 in the image-processing section 12.

[0035] An example of the object image (the image for recognition is called hereafter) which should be recognized to drawing 10 is shown. Here, the image 50 shown in drawing 10 shall be an input image, and the

image for recognition shall be specific image 51a in drawing 10 . This image 51for recognition a consists of partial images 52-1 to 52-6 of plurality (this example six), as shown in drawing 11 . The configuration of each partial image 52-1 to 52-6 is the smeared-away circle, and the color is a specific color with respectively same the partial image 52-1, the partial image 52-2 and the partial image 52-3, the partial image 52-4 and the partial image 52-5, and the partial image 52-6.

[0036] Moreover, as shown in drawing 10 , let the specific images 51b, 51c, and 51d which specific image 51a is rotated in the direction of a clockwise rotation of drawing 270 degrees 180 degrees 90 degrees, respectively, and are obtained as well as specific image 51a be the images for recognition here. The endocyst of these specific images 51b, 51c, and 51d is carried out to the input image 50 with specific image 51a so that clearly from drawing 10 .

[0037] Drawing 12 is the block diagram showing an example of the configuration of the image recognition section 14. This image recognition section 14 has the composition of having the binary-ized section 53, the binary image data selection section 54, the specific image partial judging section 55, the filtering section 56, the sampling section 57, the reference pattern section 58, and the specific image judging result output section 59.

[0038] Here, the concrete contents of processing of each component of the image recognition section 14 are explained. First, by performing binary-ized processing beforehand set up to the inputted image data, the binary-ized section 53 extracts the color of a partial image, and supports two or more colors by carrying out juxtaposition actuation of the binary-ized section 53-1 to 53-4 of plurality (this example four). By processing an AND or an OR to two or more binary image data outputted from the binary-ized section 53, the binary image data selection section 54 chooses at least one of two or more binary image data, and outputs the binary image data based on the at least one selected binary image data.

[0039] The specific image partial judging section 55 judges the existence of the partial image of a specific image with pattern matching based on the binary image data outputted from the binary image data selection section 54. The filtering section 56 considers as an input the binary image data outputted from the specific image partial judging section 55, when a connection effective pixel field exists in the binary image expressed with this binary image data, represents the connection effective pixel field concerned with one effective pixel, and outputs the

binary image data showing the binary image which consists of an effective pixel which has not been connected mutually.

[0040] The sampling section 57 divides into two or more blocks the binary image expressed with the binary image data outputted from the filtering section 56, investigates the existence of an effective pixel for every block, judges an effective block / invalid block based on this result, and outputs the binary image data which makes 1 block one unit. The sampling section 57 makes 1 block 4x4 pixels on the binary image expressed with the binary image data outputted from the filtering section 56, when at least one effective pixel (black pixel) exists during one block, it considers the block concerned as an effective block (black block), and when other, specifically, it considers the block concerned as an invalid block (white block).

[0041] The reference pattern storage section 58 memorizes the reference pattern which uses for recognition judging processing in the specific image judging result output section 59 the binary image data outputted from the sampling section 57. The specific image judging result output section 59 checks consistency with the object image which is pattern matching etc. and is beforehand stored in the reference pattern storage section 58 in the arrangement situation of a partial image based on the binary image data outputted from the sampling section 57, and outputs the degree of coincidence etc. as a recognition result.

[0042] Next, the image nullification section 15 in drawing 1 is explained. As the image input section 11, the image-processing section 12, or the image recording section 13 is controlled and it is shown in drawing 13 based on the recognition result of the image recognition section 14, this image nullification section 15 is performing processing of complete nullification (a) or predetermined field nullification (b), and cancels the specific image already recorded on the record medium. An example of the configuration of this image nullification section 15 is shown in drawing 14 .

[0043] In this example, nullification part selection section 15A which supplies a nullification signal suitably to each part 11 which constitutes this image recording equipment 10, i.e., the image input section in drawing 1 , the image-processing section 12, and the image-recording section 13 becomes the image nullification section 15, and has composition which controls supply of the nullification signal to the image input section 11, the image-processing section 12, and the image-recording section 13 based on the select data set up beforehand.

[0044] In addition, when the nullification approach is determined uniquely, since it is not necessary to control supply of the nullification signal to the image-processing section 12 and the image recording section 13, as shown in the block diagram of drawing 15 , it cannot be overemphasized that what is necessary is for the image nullification section not to exist clearly and just to be able to control nullification actuation in the image input section 11, the image-processing section 12, and the image recording section 13.
[0045] Moreover, based on the recognition result (degree of coincidence) of the image recognition section 14, a phase like an exact match or a certain amount of coincidence is established, and the image nullification section 15 can carry out alternatively nullification to the image input section 11, the image-processing section 12, and the image recording section 13.
[0046] In addition, the backup power supply 16 in drawing 1 It has for dealing with a case in order to prevent that nullification processing is carried out to an image [finishing / record / already] before the image nullification section 15 starts nullification processing, as the operator shut off the Maine power source intentionally. Even when power is not supplied from the Maine power source, actuation of equipment is continued and performed and the role which prevents a forged action beforehand is borne by making nullification actuation carry out certainly.
[0047] Next, actuation of the image nullification in the image recording equipment 10 concerning the 1st operation gestalt of the above-mentioned configuration is explained using drawing 16 which shows the relation between nullification actuation and print processing.
[0048] In drawing 16 , the image which contained the specific image from the sources, such as a personal computer and a workstation, is transmitted (a). Here, the part which has required hatching is image Rhine under transfer implementation. In addition, depending on the transmittal mode, it may be transmitted as a certain amount of image block.
[0049] In the image input section 11, the array of timing or image data is corrected to printers for transfer data (b). In the image-processing section 12, the inputted image data is processed for every pixel (c). In the image recording section 13, the image corresponding to the inputted image data is recorded on the predetermined form one by one (d). The image recognition section 14 judges existence of a specific image in parallel to these actuation (e).
[0050] In this flow of a series of, even if the specific image exists in the

transfer image even if, it will be recorded on a form, until the judgment of the existence of the specific pixel in the image recognition section 14 is made. And all the images that it was judged with those with a specific image in the image recognition section 14, and almost all images will be outputted in (f) and the image recording situation (g) in the time of being judged, and were outputted at the time are effective.

[0051] Therefore, when judged with those with a specific image, an operator makes a direction reverse, print processing is performed again, and when the case where the action which sticks the effective image outputted previously and the effective image which made the direction reverse and outputted it next is performed intentionally is assumed, a perfect specific image will be obtained. (h) which carries out nullification processing of the image already recorded by the image nullification section 15 with this operation gestalt in order to also prevent such a forged action -- he is trying to prevent forgery of a specific image by things

[0052] An example of the nullification actuation which can be carried out in the image recording section 13 to drawing 17 is shown. In this drawing (a), it saves in the location where the ink head distinguished the specific image only by conveyance of a form, and only printing actuation is performed. Nullification of the distinguished location is attained from it being on a specific image in necessary minimum actuation. In this drawing (b), conveyance of a form is not performed, but it is making an ink head backward feed, and an image is cancelled. In this case, prompt nullification processing is realizable only by the printing directions differing. In addition, the images of all the directions of Rhine may be cancelled by considering an ink head as backward feed and passing <a thing> on.

[0053] In this drawing (c), it cancels by returning all forms and making an ink head reverse-convey by the Rhine width of face. This becomes possible to cancel the form itself completely. In addition, although a poor image is suitable for an image, continuation printing of a predetermined line or the alphabetic character may be carried out. In this drawing (d), it cancels by only the specified quantity's returning a form and making an ink head reverse-convey by the Rhine width of face. This cancels the field of only the part which may have a specific image. While saving the time amount concerning nullification processing by not printing an unnecessary part, it becomes possible to also exclude the futility of ink or power.

[0054] In this drawing (e), it cancels because only the specified quantity

returns a form and an ink head also performs reverse conveyance by predetermined width of face. In this case, it limits only to the part in which a specific image may exist, and is made to operate also about the direction of Rhine. It becomes possible for this to save the time amount which nullification processing takes further, and to exclude the futility of ink or power. Coincidence is made to perform reverse conveyance of return of a form and an ink head in this drawing (f). Since nullification becomes possible by thereby more short time amount, to say nothing of the ability to exclude the futility of ink or power, the active jamming over the nullification processing from an operator becomes more difficult.

[0055] In addition, the further improvement in the speed is considered and it is [that the active jamming from an operator should be prevented] possible to gather a form bearer rate and ink head passing speed. Under the present circumstances, since printing processing of an ink head is usually performed at spacing and an image is recorded in the shape of a dotted line as shown in drawing 18 (a), it may be regarded as mere dirt etc. and there is a possibility that nullification may not fully be made. Since it corresponds to this, as shown in drawing 18 (b), the nullification processing to a specific image is certainly made, because it is made to perform printing processing of an ink head at a high speed more. Here, deterioration of the quality of printed character of carrying out high-speed printing of the ink head is enough as a function to prevent the active jamming from an operator, if not a problem but a poor image and a line drawing are recorded.

[0056] By the way, about generation of a nullification image, it has realized in the image-processing section 12 of drawing 1 . As a very easy example, it is poor black. Black data are generated because this sets the data of all three colors to "FFhex" by drawing 4 with the nullification signal supplied from the image nullification section 1. In addition, it is possible for the simplification of equipment, ink, saving of power, etc. to cancel with the ink head of one color in the case of nullification. For example, in the case of Cyanogen C, the circuit in drawing 4 serves as a mask of Cyanogen C. Moreover, in order to equalize the amount of the ink used at the time of nullification, the class of ink used by nullification for every implementation of nullification processing may be changed.

[0057] Moreover, a predetermined alphabetic character or a predetermined image is generated, and it is good also considering these as a nullification image. Drawing 19 is a block diagram at the time of adding the nullification image generation section 60 to the image-

processing section 12, among drawing, gives the same sign to drawing 5 and an equivalent part, and is shown. In this drawing, the nullification image generation section 60 answers a nullification signal, generates a nullification image, and is taken as the input of one way each of selectors 61, 62, and 63.

[0058] When each output of adders 34, 35, and 36 is considered as the input of each another side and a nullification signal is given, selectors 61, 62, and 63 are replaced with the usual image (each output of adders 34, 35, and 36), and output the nullification image from the nullification image generation section 60. When the nullification printing procedure of drawing 17 (e) is used for drawing 20 , the example which printed the warning image for nullification is shown. Thus, compared with the case where a poor image is recorded, prompt implementation of nullification is attained by more nearly high-speed record by recording the warning image which consists of a predetermined line drawing or an alphabetic character as a nullification image.

[0059] In addition, although carried out [generating a nullification image and] in the image-processing section 12 in this example, it may be made to carry out in the image recording section 13. This is because in two or more lines coincidence printing of an ink head it is difficult to supply an ink head immediately even if it supplies a nullification image in the image-processing section 12, since the buffered image is once sent to a head. By inserting a nullification image between an ink head and a buffer, it becomes possible to improve this.

[0060] By the way, in carrying out a series of nullification processings mentioned above, it is possible to establish the time difference of predetermined time between processing in the image recognition section 14, and processing in the image recording section 13. However, when the image recognition section 14 shall recognize the specific whole image or a part in carrying out this method, as shown in drawing 21 , the line buffer or memory 17 for Rhine of die length of a lengthwise direction is needed at worst. [of a specific image]

[0061] Since about 12cm is the dimension of a longitudinal direction when it carries out to the image recording section 13 and the thousand-yen bill of a Japanese bill is considered, this will become 1920 lines if the printer of 400dpi (= 16 dot/mm) is assumed. Since they are enough if there are the 5000 dots of the numbers of dots equivalent to A4 horizontal image recording width of face in 400dpi, since 8 bit(1Byte) x3 color x5000x1920=28,800,000Byte is also needed and equipment becomes expensive, by full color 8-bit data, it cannot be said as a best

policy.
[0062] However, it is possible to increase the efficiency of nullification processing of equipment more by compensating each other using the line buffer or memory 17 in the range allowed in cost, in order to make printing actuation of a nullification image into the minimum. That is, it becomes possible to suppress record of a specific image as much as possible by producing time difference by buffering of a record image between processing in the image recognition section 14, and processing in the image recording section 13, and since there are also few already recorded parts, it becomes possible to perform nullification processing quickly.
[0063] Moreover, the configuration which adds the function in which only the operator managed with a specific operator or a specific password as a modification of this operation gestalt can cancel nullification is also possible. That is, the nullification discharge section 18 which cancels nullification is formed, and only the operator managed with a specific operator or a specific password enables it to cancel nullification through this nullification discharge section 18, as shown in the block diagram of drawing 22 .
[0064] Thereby, the increase in efficiency of the activity in the development stage of a product is attained. For example, when the engine performance of the image recognition section 14 cannot be taken enough yet, it is possible to incorrect-detect frequently also about images other than a specific image, and there is a possibility of causing trouble to verification of image recording equipment of operation. However, as mentioned above, recovery ****** becomes possible about original image recording actuation by adding the function in which nullification can be canceled to **** which is failure and the contingency of the image recognition section 14. In addition, in case development is completed and it circulates as a product, it cannot be overemphasized that nullification discharge is made impossible.
[0065] Moreover, giving an ID number to each block of drawing 1 , and always taking a check by CPU etc., in order to delete a block required for these nullification intentionally or to make it not deteriorated, when it checks whether there is any modification in the configuration of equipment and there is modification, it is possible also in taking the configuration which restricts one or two or more actuation of each block. Specifically image recording section 13 itself is stopped, it is being able to be made not to perform record actuation, intentional reconstruction of an operator is restricted, and it becomes possible to

prevent implementation of forgery of a specific image.
[0066] In addition, although the above-mentioned operation gestalt took and explained the case where it applied to a line printer to the example, as actuation, the same is said of the laser as record of the direction of Rhine. For example, actuation of complete nullification (a) as actuation of the direction of Rhine of the image recording section 13 is equivalent to scanning of a laser beam printer and shown in drawing 13 , or predetermined field nullification (b) is possible.
[0067] Moreover, nullification processing can be carried out also by the backward feed [conveyance or photo conductor (the drum, sheet), or middle imprint object of a form which are a record medium] in this case. Especially, in a photo conductor or a middle imprint object, since it is an electrostatic image, a cleaning process is performed as it is, and it is eliminating the electrostatic image on a medium, and it becomes possible to cancel a specific image in the condition of not being visible to an operator, and to prevent a forged action.
[0068] Drawing 23 is the block diagram showing the configuration of the image recording equipment 70 concerning the 2nd operation gestalt of this invention. The image recording equipment 70 concerning this 2nd operation gestalt has the composition of providing the image input section 71, the image-processing section 72, the image recording section 73, the image recognition section 74, the image nullification section 75, a backup power supply 76, and the medium damage section 77. In this configuration, a configuration and an operation of each block shall be fundamentally the same, and shall explain only the medium damage section 77 newly added here to be it of each block with which drawing 1 corresponds.
[0069] When the medium damage section 77 is judged to be those with a specific image in the image recognition section 74 and directions of nullification are made As opposed to a medium [finishing / record / already], incinerate the whole surface or some of record medium with a heat head etc., or [making a hole by punch etc.] Beating is carried out by a shredder etc., nullification is realized by damaging the record medium itself, and forgery is prevented by preventing circulation of a record medium [finishing / record of a specific image].
[0070] Drawing 24 is the outline block diagram showing the example of the medium damage section 77. This drawing (a) is the thing of a configuration of having put side by side punch or the heat head 81 on the ink head 82. The actuation at the time of the damage activation in this configuration applies to actuation of the ink head shown in drawing

16 R> 6 correspondingly. Consequently, a medium is damaged as shown in drawing 25 (a). Moreover, drawing 24 (b) is the thing of a configuration of having installed a shredder or punch 83. In this configuration, a damage claim is performed only by backward feed of a form. Consequently, a medium is damaged as shown in drawing 25 (b).
[0071]
[Effect of the Invention] As explained above, when distinction of the existence of a specific image is performed by the image recognition means, in the image recording equipment on which all the all [specific / specific some or] will be recorded with an image recording means, it becomes possible by having been made to perform nullification processing on the record medium to the image [finishing / record] a high speed and to prevent ** and the forged action of a specific image efficiently cheaply.

[Translation done.]

TECHNICAL FIELD

[Field of the Invention] This invention relates to image recording equipment equipped with the function to prevent the forged action of specific images, such as a bill, and negotiable securities or a secret document, especially, about the image recording equipment which records the image corresponding to input image data on a record medium.

[Translation done.]

PRIOR ART

[Description of the Prior Art] image recording equipment -- setting -- the former, a bill, negotiable securities, or Mull -- a secret incantation -- a purpose [prevent / the forged action of specific images, such as writing,] -- carrying out -- the inside of an input image -- a bill, negotiable securities, or Mull -- a secret incantation -- it checked whether specific images, such as writing, would exist, and when it was judged that a specific image exists, it was coped with by performing predetermined processing. As the mode of processing, various methods are proposed conventionally.
[0003] Image output actuation is stopped or forbidden as one of the method of the. A nullification image is outputted as other methods. The color reproduction nature of an output image is made to differ as a method of further others. And in the image recording equipment which becomes at two or more processes, prevention of a forged action is realized by controlling each process alternatively.

[Translation done.]

EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, when distinction of the existence of a specific image is performed by the image recognition means, in the image recording equipment on which all the all [specific / specific some or] will be recorded with an image recording means, it becomes possible by having been made to perform nullification processing on the record medium to the image [finishing / record] a high speed and to prevent ** and the forged action of a specific image efficiently cheaply.

[Translation done.]

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, since it is proposed on the assumption that a copying machine, especially electrophotography, in recent years, it is hard to call it an effective means in [any] the method mentioned above to the line printer high-definition-ized, especially a color ink jet printer. The reason is explained below as contrasted with the case of a copying machine.
[0005] First, in a copying machine, time difference is in image read and image recording, and distinction of the existence of the specific image in the image recognition section can be performed in advance of image recording. For example, the time difference becomes the 1st time (R (red), G (green), B (blue) input ->C (cyanogen) output), the 2nd time (R, G, B input ->M (Magenta) output), and the 3rd time (R, G, B input ->Y (yellow) output), when the count of a scan is 3 times, and image recording is performed by Junji Men. the image recognition section -- receiving -- a RGB dot order -- since it is inputted into a degree, the existence of a specific image can be distinguished by the 1st time of the beginning, and the 2nd time, and nullification processing or other conventional forged prevention processings can be carried out at the time of the 3rd scan.
[0006] On the other hand, in the line printer, there is no time difference between image read and image recording, and whenever image data is transmitted, the image is recorded. concrete -- an input image -- a RGB dot order -- the example in the case of next being transmitted -- setting -- the image recognition section and the image recording section -- both -- a dot order -- next, it operates. Even if it is able to distinguish the existence of a specific image since distinction and image recording of the existence of the specific image in the image recognition section are aligning when application of the conventional technique to

such equipment is considered, the image to the location will be recorded.

[0007] Here, as the image recognition section, the color distribution on a manuscript is computed for every pixel by point sequential, and when a predetermined rate is reached, what is distinguished from those with a specific manuscript is mentioned as an example. Or paying attention to the predetermined part of a specific manuscript, there are some which are distinguished from a feature extraction or distribution by referring to an attention pixel and its circumference.
[0008] Moreover, in order to secure image recognition and the time difference of image recording, it is possible to buffer a predetermined image. For example, although the memory for 1 page can be installed or the method which prepares the memory of a minimum capacity, i.e., the memory which can hold data to the longitudinal direction of a manuscript, can be considered in consideration of the sense of a manuscript, since the amount of data is very huge, there is a problem that equipment becomes expensive. Moreover, although carrying out image recognition with driver software or application is also considered in advance of the image data transfer to the image recording section, processing becomes very slow and there is a trouble that the productivity of the image recording itself falls to the degree of pole.
[0009] The place which this invention is made in view of the situation mentioned above, and is made into the purpose is to offer the image recording equipment which can prevent the forged action of a specific image efficiently, even if it is the case where some or all of a specific image is recorded in the image recording section, when distinction of the existence of a specific image is performed in the image recognition section.

[Translation done.]

MEANS

[Means for Solving the Problem] An image input means by which the image recording equipment by this invention inputs image data, An image recording means to record the image corresponding to the image data inputted from this image input means on a record medium, An image recognition means to recognize whether the specific image which should forbid record into the image corresponding to the image data inputted from the image input means is contained, When recognized as the specific image being contained by this image recognition means, it has composition equipped with a nullification means to cancel the image already recorded on the record medium by the image recording means.
[0011] In the image recording equipment of the above-mentioned configuration, when distinction of the existence of a specific image is performed by the image recognition means, even if it is the case where some or all of a specific image is recorded on the record medium by the image recording means, a nullification means is performing nullification processing to an image [finishing / record] on a record medium, and prevents the forged action of a specific image beforehand.
[0012]
[Embodiment of the Invention] Hereafter, it explains to a detail, referring to a drawing about the gestalt of operation of this invention. In addition, although this operation gestalt takes and explains the case where it applies to an ink jet printer to an example, it cannot be overemphasized that it is applicable also to a process defined system with other line printers, laser beam printers, or image recording equipment, for example, a copying machine and a multiple printing system, and the copy system which combined the scanner printer further.
[0013] Drawing 1 is the block diagram showing the configuration of the image recording equipment 10 concerning the 1st operation gestalt of

this invention. The image recording equipment 10 concerning this 1st operation gestalt has the composition of providing the image input section 11, the image-processing section 12, the image recording section 13, the image recognition section 14, the image nullification section 15, and a backup power supply 16.

[0014] Image data is transmitted to this image recording equipment 10 from external devices (not shown), such as a personal computer. Here, as a transfer medium, various interfaces, such as RS232-C, USB, IEEE 1284, IEEE1394, 100BASE-T, or a signal line of local agreement, can be considered. Here, explanation of a detailed protocol is omitted.

[0015] Next, the concrete configuration of each block in the image recording equipment 10 of the above-mentioned configuration is explained.

[0016] First, the image input section 11 is bearing the reception of the transfer data corresponding to a protocol. Here, as a protocol of an image transfer, USB is mentioned as an example and explained. In a printer, it is common to use the bulk transfer to which data are guaranteed. Although the transmittal mode of USB has an isochronous transfer and the other control transfer for a configuration, the explanation is omitted here and it explains only supposing the bulk transfer to which image data is transmitted.

[0017] A bulk transfer consists of a token packet, a data packet, and a handshake packet, and serial transmission of the image data is carried out by the data packet. Drawing 2 is drawing explaining the outline of the data transfer in USB. A bulk transfer is in a basic frame and it is divided into three more packets. It will be set to SYNC, PID, data, and CRC16 and EOP if a data packet is decomposed into a detail. It is the data sequence of the bottom which showed this with serial data. EOP is controlled by transceiver level.

[0018] in order to realize a color picture data transfer -- here -- a RGB dot order -- it explains on the assumption that a degree. Therefore, a data area becomes like drawing 3 in the data packet of drawing 2 . with a natural thing, RGB->YMC conversion is carried out by the source -- having -- a YMC dot order -- Rhine which is sent next or is sent for every RGB of one line -- you may be Junji Men who becomes every one-page RGB further one by one.

[0019] Drawing 4 is the block diagram showing the example of a circuit of the serial-parallel conversion circuit which performs serial-parallel conversion about a data area in the data packet of drawing 2 . this example of a circuit -- a RGB dot order -- it has the composition of

changing the 8-bit serial data as follows into parallel data of 8 bits of RGB.

[0020] Eight D type flip-flops 21-1 to 21-8 which specifically latch 8-bit serial data (it is hereafter described as D-FF), Eight OR-gate 22R-1-22R-8 per color which considers each latch output of these D-FF 21-1 to 21-8, and the nullification signal supplied from the image nullification section 15 as two inputs, 22G-1 - 22 G-8, and 22B-1-22B-8, These OR-gate 22R-1-22R-8, 22G-1 - 22 G-8, eight D-FF23R-1-23R-8 per color which latches each output of 22B-1-22B-8, 23G-1 - 23 G-8, and 23B-1-23B-8, When a clock enable signal is generated from the clock enabling generator 24 which generates a clock enable signal, and this clock enabling generator 24, It consists of the AND gates 25R, 25G, and 25B which supply a clock signal to D-FF23R-1-23R-8, 23G-1 - 23 G-8, and 23B-1-23B-8.

[0021] The timing of operation in the serial-parallel conversion circuit of the above-mentioned configuration serves as a form like drawing 3 . moreover, D-FF23R-1-23R- for parallel data of RGB -- 8 and 23 -- D-FF23R-1-23 corresponding to each color data of RGB in the clock signal of G-1 - 23 G-8, and 23B-1-23B-8 -- it is appropriately controlled by the clock enable signal generated from the clock enabling generator 24 in order to incorporate to R-8, 23G-1 - 23 G-8, and 23B-1-23B-8.

[0022] Next, the image-processing section 12 in drawing 1 changes the image data inputted from the image input section 11 into the format suitable for recording on a record medium (not shown). For example, when an input image is a full color image of RGB, it changes into the full color image of YMC. Moreover, it is good also as an addition of light color YMC etc. if needed for the purpose of improvement in four colors of YMCK (K is black), or neutral-colors tone repeatability.

[0023] Here, RGB->YMC conversion is explained concretely. A ceremony (1) is held as an example of the approximate expression of conversion.

[0024]

[Equation 1]

$$\begin{bmatrix} Y \\ M \\ C \end{bmatrix} = \begin{bmatrix} C11 & C12 & C13 \\ C21 & C22 & C23 \\ C31 & C32 & C33 \end{bmatrix} \begin{bmatrix} R \\ G \\ B \end{bmatrix} \quad \cdots (1)$$

[0025] When a more faithful change is required, it is a well-known fact that complication of a formula or the LUT conversion from a three-dimension color space is mentioned. An example of the concrete

configuration of the image-processing section 12 is shown in drawing 5 . This develops a formula (1).

[0026] Namely, the multipliers 31R, 31G, and 31B which hang a coefficient C 11, and C12 and C13 on each data of RGB, The multipliers 32R, 32G, and 32B which hang a coefficient C 21, and C22 and C23 on each data of RGB, The multipliers 33R, 33G, and 33B which hang a coefficient C 31, and C32 and C33 on each data of RGB, The adder 34 adding each multiplication output of Multipliers 31R, 31G, and 31B, The adder 35 adding each multiplication output of Multipliers 32R, 32G, and 32B, It has the OR gates 37-39 which consider the adder 36 adding each multiplication output of Multipliers 33R, 33G, and 33B, and each output and nullification signal of these adders 34-36 as two inputs, and has composition which derives each output of the OR gates 37-39 as YMC data.

[0027] In the image-processing section 12, it amends further in the gradation reappearance format of having been suitable for the image recording section 13, or various processings, such as a resolution format, and screen generation or smoothing processing, are also performed.

[0028] Next, the image recording section 13 in drawing 1 records the image corresponding to the image data changed in the image-processing section 12 on a record medium. A record medium is specifically paper, an OHP sheet, or cloth, and these are conveyed by the conveyance section (not shown) which constitutes a part of image recording section 13.

[0029] In the image recording section 13, it moves perpendicularly to the conveyance direction of a record medium in the record part of the image itself. More specifically in an ink jet printer, an ink head is mentioned as an example. Therefore, the image recording section 13 has the record part of the image itself, and the indispensable conveyance part of a record medium.

[0030] Drawing 6 is the block diagram showing an example of the concrete configuration of the image recording section 13. In this drawing, the ink head 41 carries out image recording over a record medium (not shown) based on the image data and image synchronizing signal which were inputted. Based on an image synchronizing signal, forward direction ****** moves [in / to the form conveyance direction / for the ink head 41 / a perpendicular direction] the head transfer-control section 42 to hard flow. The form transfer-control section 43 conveys a form only for the specified quantity to the forward direction or hard flow based on an

image synchronizing signal.
[0031] Drawing 7 is drawing explaining the timing at the time of at least each part synchronizing and operating. The ink head 41 carries out sequential record actuation of the image inputted for every pixel, and the head transfer-control section 42 moves the ink head 41 perpendicularly by 1-pixel width of face one by one to the form conveyance direction synchronizing with this. And after printing of the image data for one line is completed, the form transfer-control section 43 moves a form by one-line width of face. Each part carries out predetermined nullification actuation based on a nullification signal during these actuation.
[0032] In addition, although the image recording of the ink head 41 is a pixel unit, you may make it raise productivity by printing to two or more line coincidence to page orientation. That is, it has pointed out that the ink nozzle of the ink head 41 arranges to 1 train xn line (n is one or more integers), and is constituted. The example of a configuration in that case is shown in drawing 8 . It has the line buffer 44 for two or more lines holding the image data of page orientation, and has composition which supplies the image data for two or more lines to coincidence at the ink head 41 so that clearly from this drawing.
[0033] Drawing 9 is drawing explaining the timing of the actuation in the image recording section of the configuration of drawing 8 . As shown in this timing chart, ink head processing of three lines and head conveyance will be performed, and conveyance of a form will be performed every three lines. Thus, the increase in efficiency of image recording actuation can be attained by printing to two or more line coincidence to page orientation.
[0034] Next, the image recognition section 14 in drawing 1 recognizes whether a specific image exists in the image data inputted from the image input section 11. In addition, although the image data inputted from the image input section 11 was considered as the configuration which considers as a direct input at the image recognition section 14 in this example, you may be the configuration of inputting the image data after processing into the image recognition section 14 in the image-processing section 12.
[0035] An example of the object image (the image for recognition is called hereafter) which should be recognized to drawing 10 is shown. Here, the image 50 shown in drawing 10 shall be an input image, and the image for recognition shall be specific image 51a in drawing 10 . This image 51for recognition a consists of partial images 52-1 to 52-6 of

plurality (this example six), as shown in drawing 11 . The configuration of each partial image 52-1 to 52-6 is the smeared-away circle, and the color is a specific color with respectively same the partial image 52-1, the partial image 52-2 and the partial image 52-3, the partial image 52-4 and the partial image 52-5, and the partial image 52-6.

[0036] Moreover, as shown in drawing 10 , let the specific images 51b, 51c, and 51d which specific image 51a is rotated in the direction of a clockwise rotation of drawing 270 degrees 180 degrees 90 degrees, respectively, and are obtained as well as specific image 51a be the images for recognition here. The endocyst of these specific images 51b, 51c, and 51d is carried out to the input image 50 with specific image 51a so that clearly from drawing 10 .

[0037] Drawing 12 is the block diagram showing an example of the configuration of the image recognition section 14. This image recognition section 14 has the composition of having the binary-ized section 53, the binary image data selection section 54, the specific image partial judging section 55, the filtering section 56, the sampling section 57, the reference pattern section 58, and the specific image judging result output section 59.

[0038] Here, the concrete contents of processing of each component of the image recognition section 14 are explained. First, by performing binary-ized processing beforehand set up to the inputted image data, the binary-ized section 53 extracts the color of a partial image, and supports two or more colors by carrying out juxtaposition actuation of the binary-ized section 53-1 to 53-4 of plurality (this example four). By processing an AND or an OR to two or more binary image data outputted from the binary-ized section 53, the binary image data selection section 54 chooses at least one of two or more binary image data, and outputs the binary image data based on the at least one selected binary image data.

[0039] The specific image partial judging section 55 judges the existence of the partial image of a specific image with pattern matching based on the binary image data outputted from the binary image data selection section 54. The filtering section 56 considers as an input the binary image data outputted from the specific image partial judging section 55, when a connection effective pixel field exists in the binary image expressed with this binary image data, represents the connection effective pixel field concerned with one effective pixel, and outputs the binary image data showing the binary image which consists of an effective pixel which has not been connected mutually.

[0040] The sampling section 57 divides into two or more blocks the binary image expressed with the binary image data outputted from the filtering section 56, investigates the existence of an effective pixel for every block, judges an effective block / invalid block based on this result, and outputs the binary image data which makes 1 block one unit. The sampling section 57 makes 1 block 4x4 pixels on the binary image expressed with the binary image data outputted from the filtering section 56, when at least one effective pixel (black pixel) exists during one block, it considers the block concerned as an effective block (black block), and when other, specifically, it considers the block concerned as an invalid block (white block).
[0041] The reference pattern storage section 58 memorizes the reference pattern which uses for recognition judging processing in the specific image judging result output section 59 the binary image data outputted from the sampling section 57. The specific image judging result output section 59 checks consistency with the object image which is pattern matching etc. and is beforehand stored in the reference pattern storage section 58 in the arrangement situation of a partial image based on the binary image data outputted from the sampling section 57, and outputs the degree of coincidence etc. as a recognition result.
[0042] Next, the image nullification section 15 in drawing 1 is explained. As the image input section 11, the image-processing section 12, or the image recording section 13 is controlled and it is shown in drawing 13 based on the recognition result of the image recognition section 14, this image nullification section 15 is performing processing of complete nullification (a) or predetermined field nullification (b), and cancels the specific image already recorded on the record medium. An example of the configuration of this image nullification section 15 is shown in drawing 14 .
[0043] In this example, nullification part selection section 15A which supplies a nullification signal suitably to each part 11 which constitutes this image recording equipment 10, i.e., the image input section in drawing 1 , the image-processing section 12, and the image-recording section 13 becomes the image nullification section 15, and has composition which controls supply of the nullification signal to the image input section 11, the image-processing section 12, and the image-recording section 13 based on the select data set up beforehand.
[0044] In addition, when the nullification approach is determined uniquely, since it is not necessary to control supply of the nullification

signal to the image-processing section 12 and the image recording section 13, as shown in the block diagram of drawing 15 , it cannot be overemphasized that what is necessary is for the image nullification section not to exist clearly and just to be able to control nullification actuation in the image input section 11, the image-processing section 12, and the image recording section 13.

[0045] Moreover, based on the recognition result (degree of coincidence) of the image recognition section 14, a phase like an exact match or a certain amount of coincidence is established, and the image nullification section 15 can carry out alternatively nullification to the image input section 11, the image-processing section 12, and the image recording section 13.

[0046] In addition, the backup power supply 16 in drawing 1 It has for dealing with a case in order to prevent that nullification processing is carried out to an image [finishing / record / already] before the image nullification section 15 starts nullification processing, as the operator shut off the Maine power source intentionally. Even when power is not supplied from the Maine power source, actuation of equipment is continued and performed and the role which prevents a forged action beforehand is borne by making nullification actuation carry out certainly.

[0047] Next, actuation of the image nullification in the image recording equipment 10 concerning the 1st operation gestalt of the above-mentioned configuration is explained using drawing 16 which shows the relation between nullification actuation and print processing.

[0048] In drawing 16 , the image which contained the specific image from the sources, such as a personal computer and a workstation, is transmitted (a). Here, the part which has required hatching is image Rhine under transfer implementation. In addition, depending on the transmittal mode, it may be transmitted as a certain amount of image block.

[0049] In the image input section 11, the array of timing or image data is corrected to printers for transfer data (b). In the image-processing section 12, the inputted image data is processed for every pixel (c). In the image recording section 13, the image corresponding to the inputted image data is recorded on the predetermined form one by one (d). The image recognition section 14 judges existence of a specific image in parallel to these actuation (e).

[0050] In this flow of a series of, even if the specific image exists in the transfer image even if, it will be recorded on a form, until the judgment of the existence of the specific pixel in the image recognition section 14

is made. And all the images that it was judged with those with a specific image in the image recognition section 14, and almost all images will be outputted in (f) and the image recording situation (g) in the time of being judged, and were outputted at the time are effective.

[0051] Therefore, when judged with those with a specific image, an operator makes a direction reverse, print processing is performed again, and when the case where the action which sticks the effective image outputted previously and the effective image which made the direction reverse and outputted it next is performed intentionally is assumed, a perfect specific image will be obtained. (h) which carries out nullification processing of the image already recorded by the image nullification section 15 with this operation gestalt in order to also prevent such a forged action -- he is trying to prevent forgery of a specific image by things

[0052] An example of the nullification actuation which can be carried out in the image recording section 13 to drawing 17 is shown. In this drawing (a), it saves in the location where the ink head distinguished the specific image only by conveyance of a form, and only printing actuation is performed. Nullification of the distinguished location is attained from it being on a specific image in necessary minimum actuation. In this drawing (b), conveyance of a form is not performed, but it is making an ink head backward feed, and an image is cancelled. In this case, prompt nullification processing is realizable only by the printing directions differing. In addition, the images of all the directions of Rhine may be cancelled by considering an ink head as backward feed and passing <a thing> on.

[0053] In this drawing (c), it cancels by returning all forms and making an ink head reverse-convey by the Rhine width of face. This becomes possible to cancel the form itself completely. In addition, although a poor image is suitable for an image, continuation printing of a predetermined line or the alphabetic character may be carried out. In this drawing (d), it cancels by only the specified quantity's returning a form and making an ink head reverse-convey by the Rhine width of face. This cancels the field of only the part which may have a specific image. While saving the time amount concerning nullification processing by not printing an unnecessary part, it becomes possible to also exclude the futility of ink or power.

[0054] In this drawing (e), it cancels because only the specified quantity returns a form and an ink head also performs reverse conveyance by predetermined width of face. In this case, it limits only to the part in

which a specific image may exist, and is made to operate also about the direction of Rhine. It becomes possible for this to save the time amount which nullification processing takes further, and to exclude the futility of ink or power. Coincidence is made to perform reverse conveyance of return of a form and an ink head in this drawing (f). Since nullification becomes possible by thereby more short time amount, to say nothing of the ability to exclude the futility of ink or power, the active jamming over the nullification processing from an operator becomes more difficult.

[0055] In addition, the further improvement in the speed is considered and it is [that the active jamming from an operator should be prevented] possible to gather a form bearer rate and ink head passing speed. Under the present circumstances, since printing processing of an ink head is usually performed at spacing and an image is recorded in the shape of a dotted line as shown in drawing 18 (a), it may be regarded as mere dirt etc. and there is a possibility that nullification may not fully be made. Since it corresponds to this, as shown in drawing 18 (b), the nullification processing to a specific image is certainly made, because it is made to perform printing processing of an ink head at a high speed more. Here, deterioration of the quality of printed character of carrying out high-speed printing of the ink head is enough as a function to prevent the active jamming from an operator, if not a problem but a poor image and a line drawing are recorded.

[0056] By the way, about generation of a nullification image, it has realized in the image-processing section 12 of drawing 1 . As a very easy example, it is poor black. Black data are generated because this sets the data of all three colors to "FFhex" by drawing 4 with the nullification signal supplied from the image nullification section 1. In addition, it is possible for the simplification of equipment, ink, saving of power, etc. to cancel with the ink head of one color in the case of nullification. For example, in the case of Cyanogen C, the circuit in drawing 4 serves as a mask of Cyanogen C. Moreover, in order to equalize the amount of the ink used at the time of nullification, the class of ink used by nullification for every implementation of nullification processing may be changed.

[0057] Moreover, a predetermined alphabetic character or a predetermined image is generated, and it is good also considering these as a nullification image. Drawing 19 is a block diagram at the time of adding the nullification image generation section 60 to the image-processing section 12, among drawing, gives the same sign to drawing 5 and an equivalent part, and is shown. In this drawing, the nullification

image generation section 60 answers a nullification signal, generates a nullification image, and is taken as the input of one way each of selectors 61, 62, and 63.

[0058] When each output of adders 34, 35, and 36 is considered as the input of each another side and a nullification signal is given, selectors 61, 62, and 63 are replaced with the usual image (each output of adders 34, 35, and 36), and output the nullification image from the nullification image generation section 60. When the nullification printing procedure of drawing 17 (e) is used for drawing 20 , the example which printed the warning image for nullification is shown. Thus, compared with the case where a poor image is recorded, prompt implementation of nullification is attained by more nearly high-speed record by recording the warning image which consists of a predetermined line drawing or an alphabetic character as a nullification image.

[0059] In addition, although carried out [generating a nullification image and] in the image-processing section 12 in this example, it may be made to carry out in the image recording section 13. This is because in two or more lines coincidence printing of an ink head it is difficult to supply an ink head immediately even if it supplies a nullification image in the image-processing section 12, since the buffered image is once sent to a head. By inserting a nullification image between an ink head and a buffer, it becomes possible to improve this.

[0060] By the way, in carrying out a series of nullification processings mentioned above, it is possible to establish the time difference of predetermined time between processing in the image recognition section 14, and processing in the image recording section 13. However, when the image recognition section 14 shall recognize the specific whole image or a part in carrying out this method, as shown in drawing 21 , the line buffer or memory 17 for Rhine of die length of a lengthwise direction is needed at worst. [of a specific image]

[0061] Since about 12cm is the dimension of a longitudinal direction when it carries out to the image recording section 13 and the thousand-yen bill of a Japanese bill is considered, this will become 1920 lines if the printer of 400dpi (= 16 dot/mm) is assumed. Since they are enough if there are the 5000 dots of the numbers of dots equivalent to A4 horizontal image recording width of face in 400dpi, since 8 bit(1Byte) x3 color x5000x1920=28,800,000Byte is also needed and equipment becomes expensive, by full color 8-bit data, it cannot be said as a best policy.

[0062] However, it is possible to increase the efficiency of nullification

processing of equipment more by compensating each other using the line buffer or memory 17 in the range allowed in cost, in order to make printing actuation of a nullification image into the minimum. That is, it becomes possible to suppress record of a specific image as much as possible by producing time difference by buffering of a record image between processing in the image recognition section 14, and processing in the image recording section 13, and since there are also few already recorded parts, it becomes possible to perform nullification processing quickly.

[0063] Moreover, the configuration which adds the function in which only the operator managed with a specific operator or a specific password as a modification of this operation gestalt can cancel nullification is also possible. That is, the nullification discharge section 18 which cancels nullification is formed, and only the operator managed with a specific operator or a specific password enables it to cancel nullification through this nullification discharge section 18, as shown in the block diagram of drawing 22 .

[0064] Thereby, the increase in efficiency of the activity in the development stage of a product is attained. For example, when the engine performance of the image recognition section 14 cannot be taken enough yet, it is possible to incorrect-detect frequently also about images other than a specific image, and there is a possibility of causing trouble to verification of image recording equipment of operation. However, as mentioned above, recovery ****** becomes possible about original image recording actuation by adding the function in which nullification can be canceled to **** which is failure and the contingency of the image recognition section 14. In addition, in case development is completed and it circulates as a product, it cannot be overemphasized that nullification discharge is made impossible.

[0065] Moreover, giving an ID number to each block of drawing 1 , and always taking a check by CPU etc., in order to delete a block required for these nullification intentionally or to make it not deteriorated, when it checks whether there is any modification in the configuration of equipment and there is modification, it is possible also in taking the configuration which restricts one or two or more actuation of each block. Specifically image recording section 13 itself is stopped, it is being able to be made not to perform record actuation, intentional reconstruction of an operator is restricted, and it becomes possible to prevent implementation of forgery of a specific image.

[0066] In addition, although the above-mentioned operation gestalt took

and explained the case where it applied to a line printer to the example, as actuation, the same is said of the laser as record of the direction of Rhine. For example, actuation of complete nullification (a) as actuation of the direction of Rhine of the image recording section 13 is equivalent to scanning of a laser beam printer and shown in drawing 13 , or predetermined field nullification (b) is possible.

[0067] Moreover, nullification processing can be carried out also by the backward feed [conveyance or photo conductor (the drum, sheet), or middle imprint object of a form which are a record medium] in this case. Especially, in a photo conductor or a middle imprint object, since it is an electrostatic image, a cleaning process is performed as it is, and it is eliminating the electrostatic image on a medium, and it becomes possible to cancel a specific image in the condition of not being visible to an operator, and to prevent a forged action.

[0068] Drawing 23 is the block diagram showing the configuration of the image recording equipment 70 concerning the 2nd operation gestalt of this invention. The image recording equipment 70 concerning this 2nd operation gestalt has the composition of providing the image input section 71, the image-processing section 72, the image recording section 73, the image recognition section 74, the image nullification section 75, a backup power supply 76, and the medium damage section 77. In this configuration, a configuration and an operation of each block shall be fundamentally the same, and shall explain only the medium damage section 77 newly added here to be it of each block with which drawing 1 corresponds.

[0069] When the medium damage section 77 is judged to be those with a specific image in the image recognition section 74 and directions of nullification are made As opposed to a medium [finishing / record / already], incinerate the whole surface or some of record medium with a heat head etc., or [making a hole by punch etc.] Beating is carried out by a shredder etc., nullification is realized by damaging the record medium itself, and forgery is prevented by preventing circulation of a record medium [finishing / record of a specific image].

[0070] Drawing 24 is the outline block diagram showing the example of the medium damage section 77. This drawing (a) is the thing of a configuration of having put side by side punch or the heat head 81 on the ink head 82. The actuation at the time of the damage activation in this configuration applies to actuation of the ink head shown in drawing 16 R> 6 correspondingly. Consequently, a medium is damaged as shown in drawing 25 (a). Moreover, drawing 24 (b) is the thing of a configuration

of having installed a shredder or punch 83. In this configuration, a damage claim is performed only by backward feed of a form. Consequently, a medium is damaged as shown in drawing 25 (b).

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the configuration of the image recording equipment concerning the 1st operation gestalt of this invention.
[Drawing 2] It is drawing explaining the outline of the data transfer in USB.
[Drawing 3] It is drawing explaining the data area in USB.
[Drawing 4] It is the block diagram showing the example of a circuit of the serial-parallel conversion circuit in the image input section.
[Drawing 5] It is the block diagram showing an example of the concrete configuration of the image-processing section.
[Drawing 6] It is the block diagram showing an example of the concrete configuration of the image recording section.
[Drawing 7] It is drawing explaining the timing at the time of at least each part of the image recording section synchronizing and operating.
[Drawing 8] It is the block diagram showing the example of a configuration of the image recording section equipped with the ink head of 1xn.
[Drawing 9] It is drawing explaining the timing of the actuation in the image recording section equipped with the ink head of 1xn.
[Drawing 10] It is drawing showing an example of the object image which should be recognized.
[Drawing 11] It is the enlarged drawing of the object image which should be recognized.
[Drawing 12] It is the block diagram showing an example of the configuration of the image recognition section.
[Drawing 13] It is the conceptual diagram of nullification image recording.

[Drawing 14] It is the block diagram showing an example of the configuration of the image nullification section.
[Drawing 15] It is the block diagram showing a configuration in case the image nullification section does not exist clearly.
[Drawing 16] It is drawing explaining the relation between nullification actuation and print processing.
[Drawing 17] It is drawing showing the example of the nullification which can be carried out in the image recording section of operation.
[Drawing 18] It is drawing explaining the nullification image in the case of accelerating ink head printing processing.
[Drawing 19] It is the block diagram showing other examples of a configuration of the image-processing section.
[Drawing 20] It is drawing showing the example which printed the warning image.
[Drawing 21] It is the block diagram showing the example of a configuration at the time of having memory.
[Drawing 22] It is the block diagram showing the example of a configuration at the time of having the nullification discharge section.
[Drawing 23] It is the block diagram showing the configuration of the image recording equipment concerning the 2nd operation gestalt of this invention.
[Drawing 24] It is the outline block diagram showing the example of the medium damage section.
[Drawing 25] It is drawing showing the example of damage of a medium.
[Description of Notations]
10, 10', 70 [-- 14 The image recording section 74 / -- 15 The image recognition section 75 / -- 16 The image nullification section, 76 / -- A backup power supply, 18 / -- The nullification discharge section 77 / -- Medium damage section] -- 11 Image recording equipment, 71 -- 12 The image input section, 72 -- 13 The image-processing section, 73

[Translation done.]

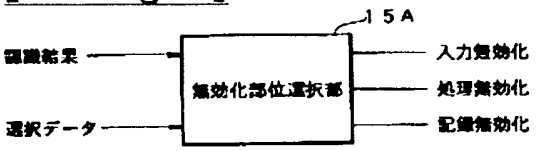
* NOTICES *

JPO and NCIPI are not responsible for any damages caused by the use of this translation.

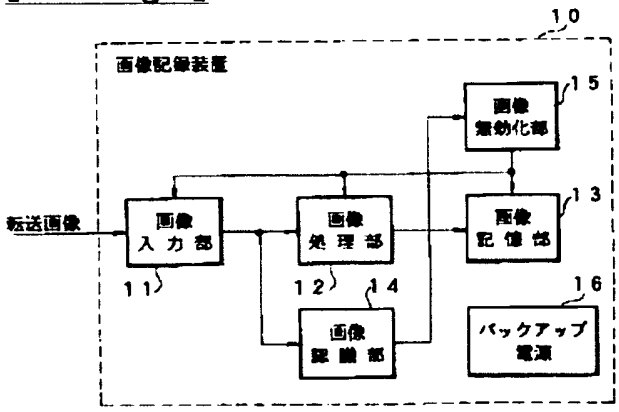
1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

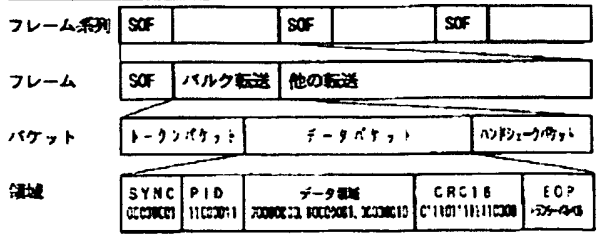
[Drawing 14]



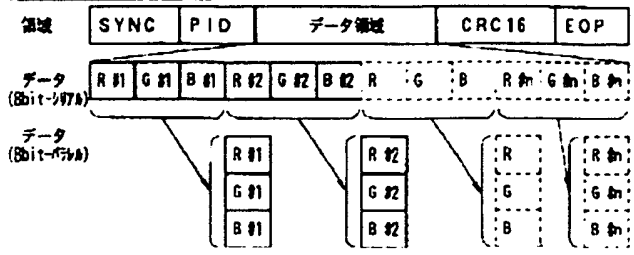
[Drawing 1]



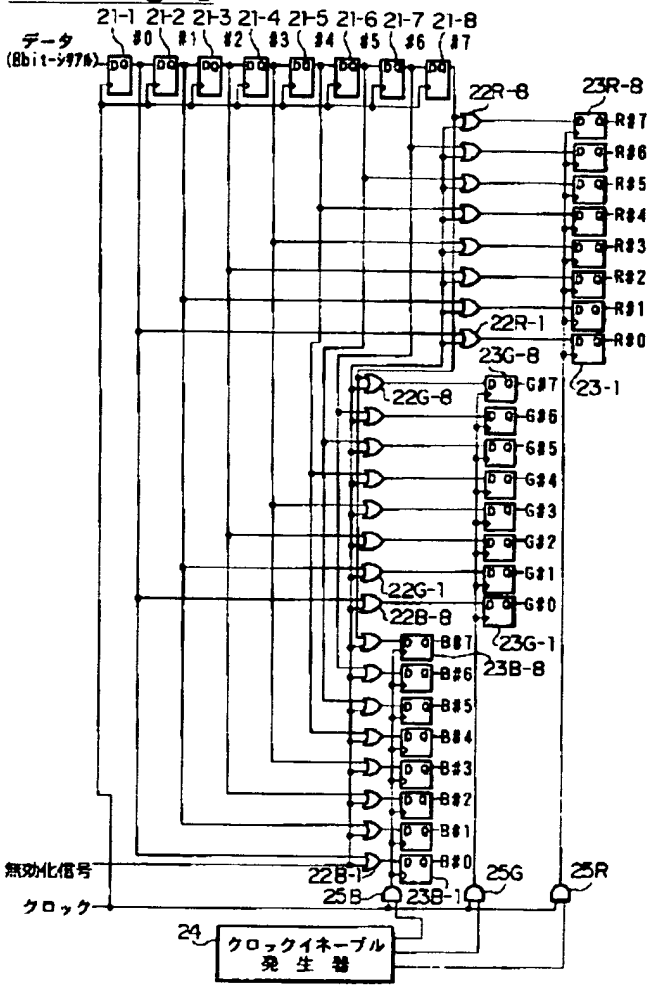
[Drawing 2]



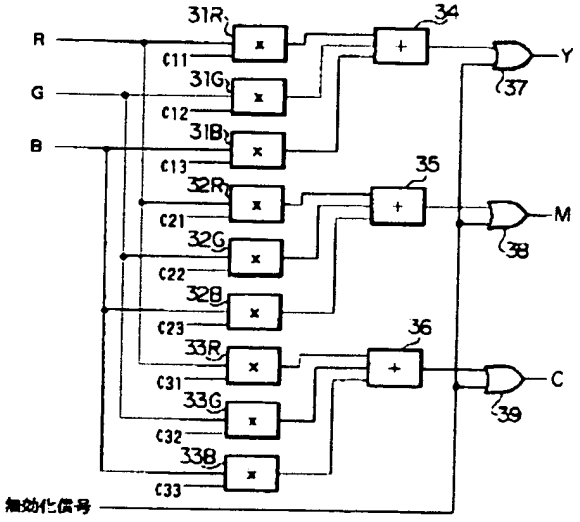
[Drawing 3]



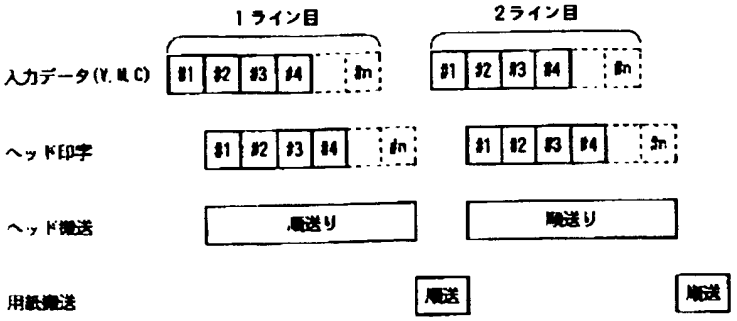
[Drawing 4]



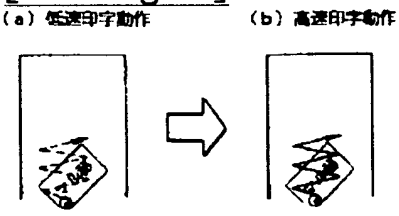
[Drawing 5]



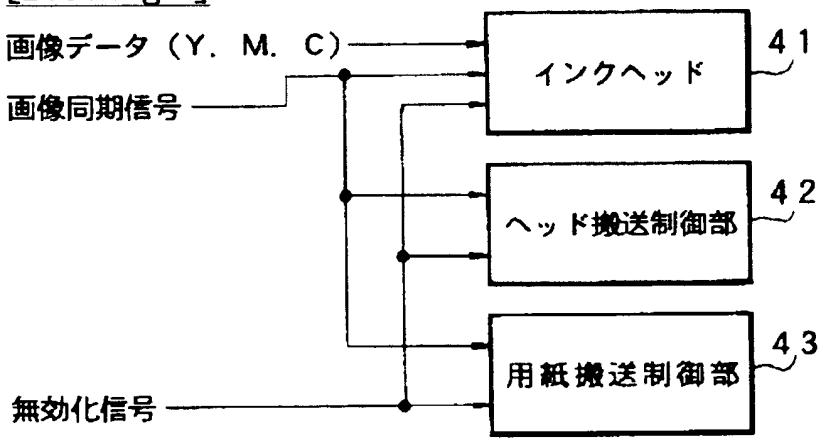
[Drawing 7]



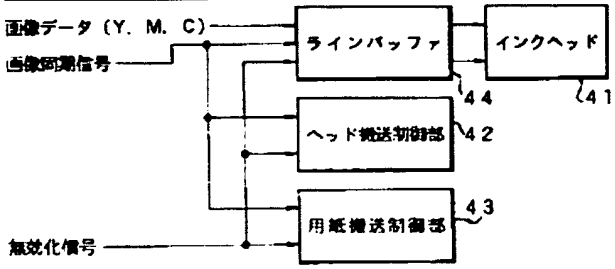
[Drawing 18]



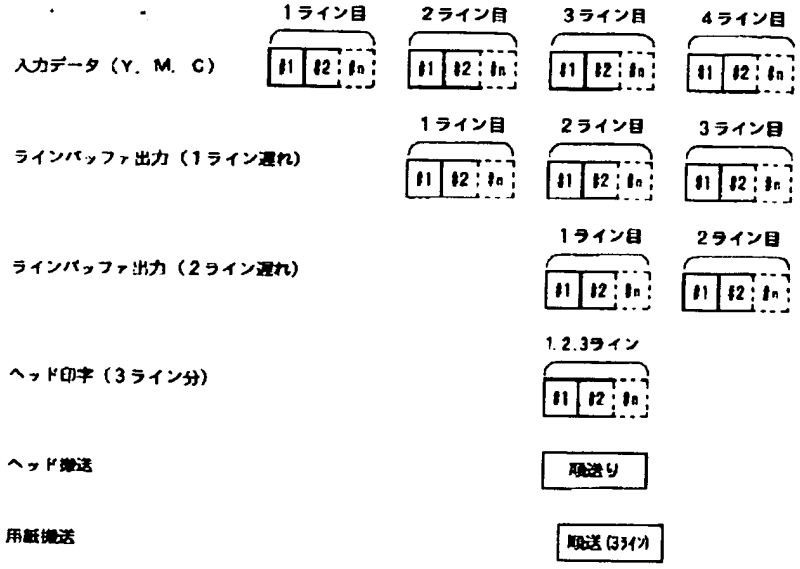
[Drawing 6]



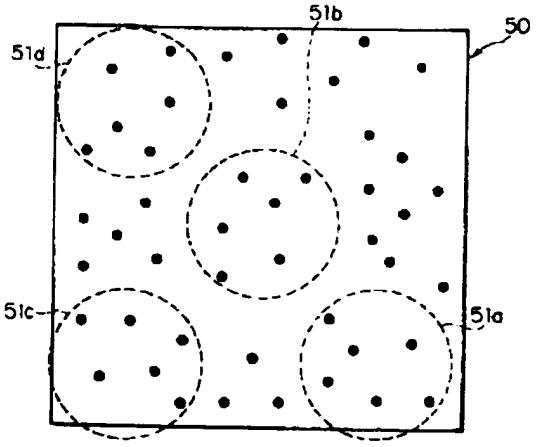
[Drawing 8]



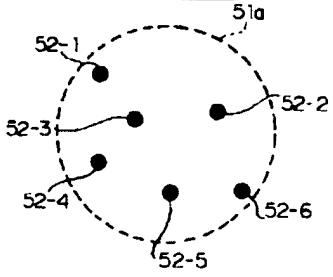
[Drawing 9]



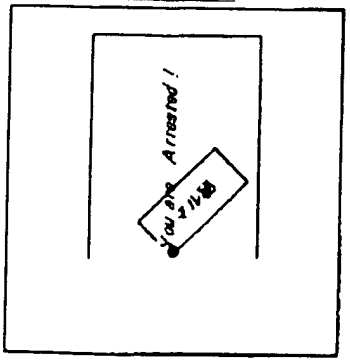
[Drawing 10]



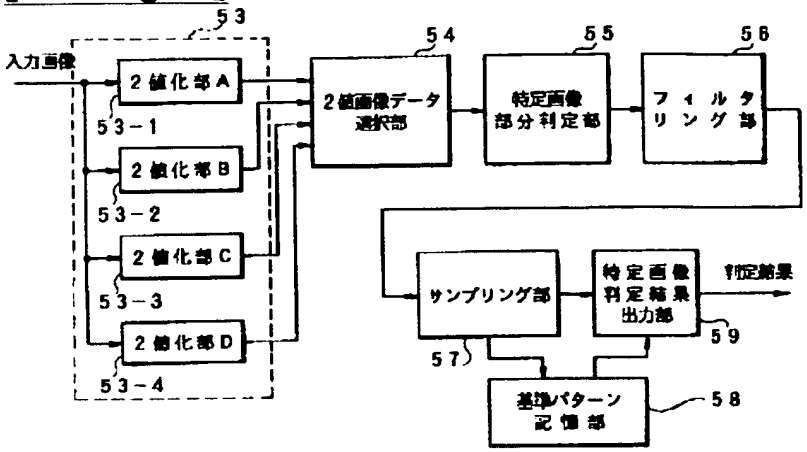
[Drawing 11]



[Drawing 20]

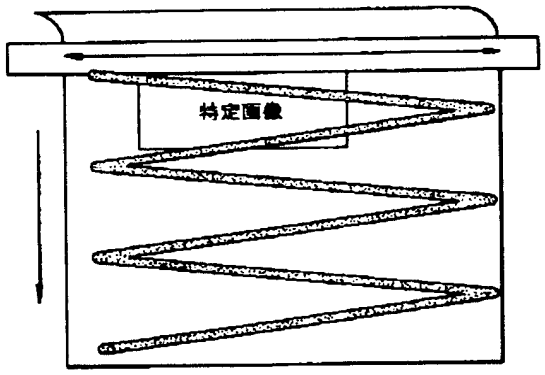


[Drawing 12]

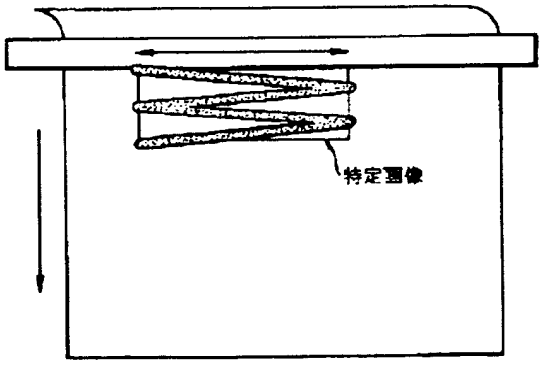


[Drawing 13]

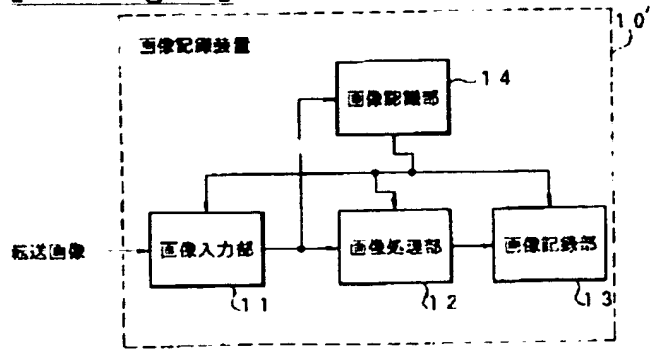
(a) 前面無効化



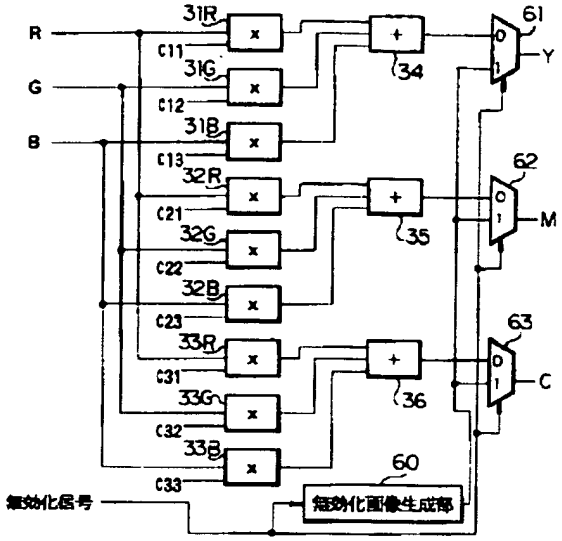
(b) 所定領域無効化



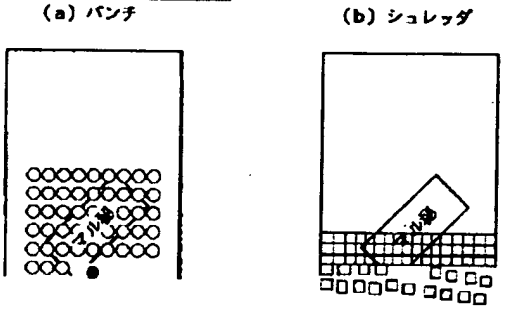
[Drawing 15]



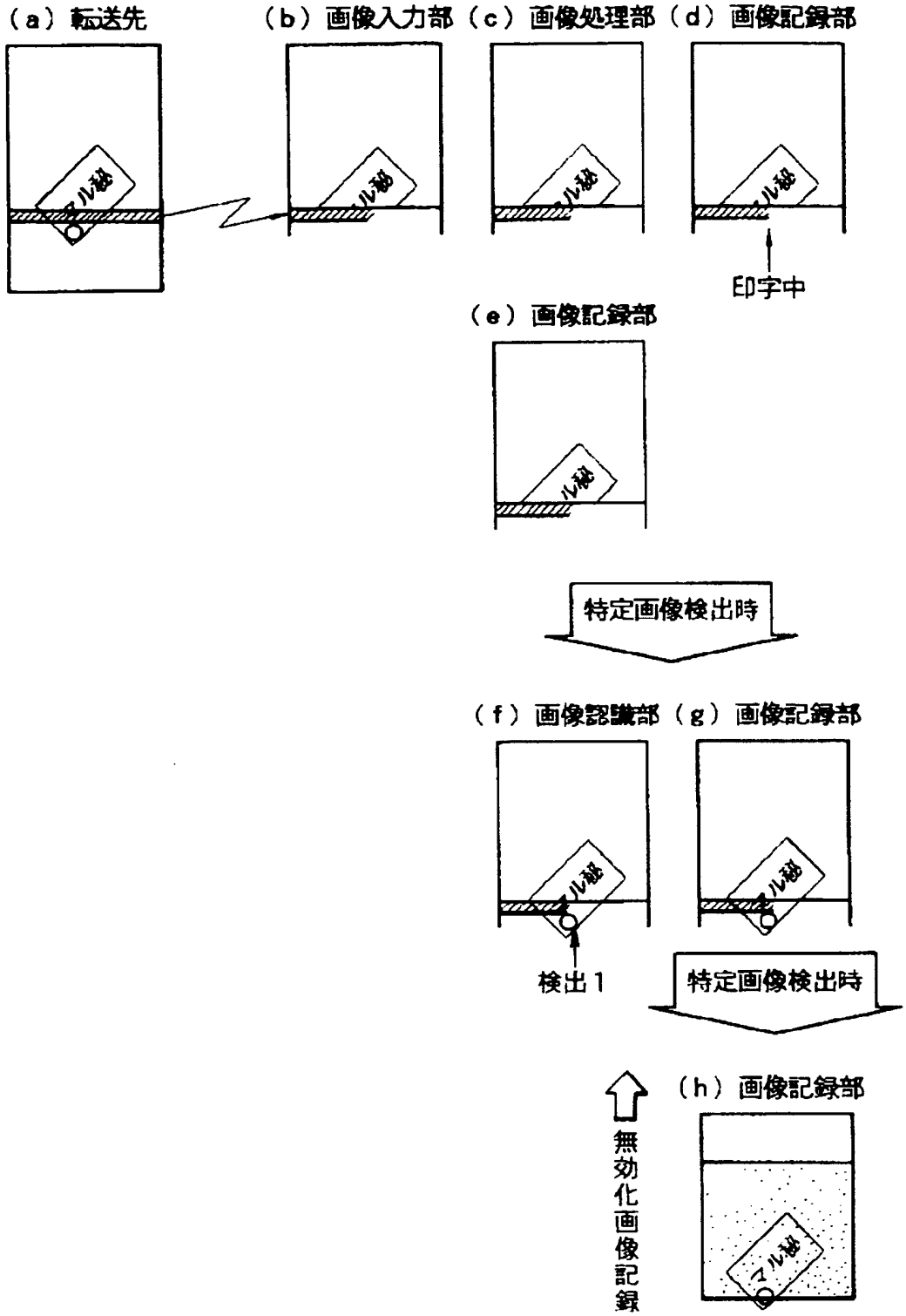
[Drawing 19]



[Drawing 25]

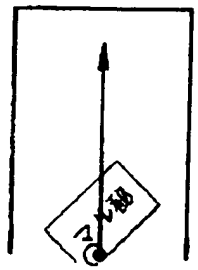


[Drawing 16]

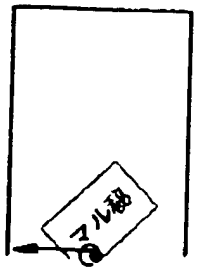

（a）転送先
（b）画像入力部
（c）画像処理部
（d）画像記録部
印字中
（e）画像記録部
特定画像検出時
（f）画像認識部
（g）画像記録部
検出１
特定画像検出時
（h）画像記録部
無効化画像記録

[Drawing 17]

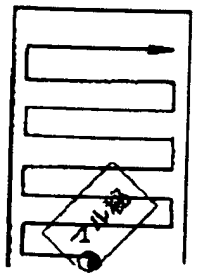
（a）用紙逆送のみ



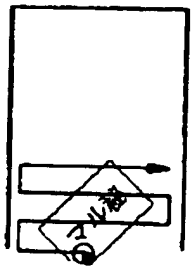
（b）ヘッド逆送のみ



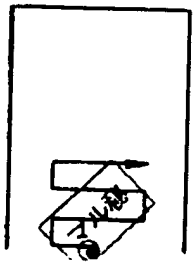
（c）用紙全面逆送＆
ヘッドライン幅逆搬送



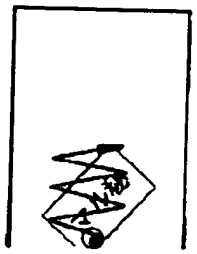
（d）用紙所定量逆搬送＆
ヘッドライン幅逆搬送



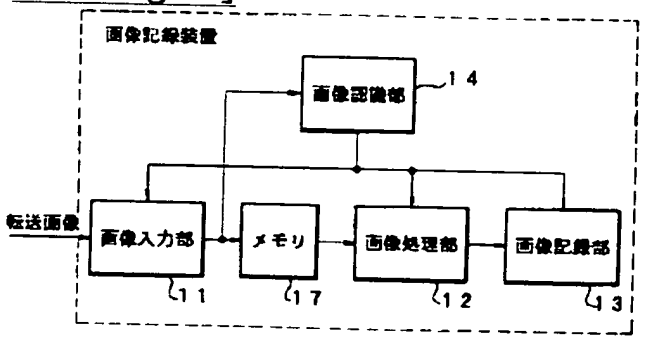
（e）用紙所定量逆搬送
＆ヘッド所定幅逆搬送



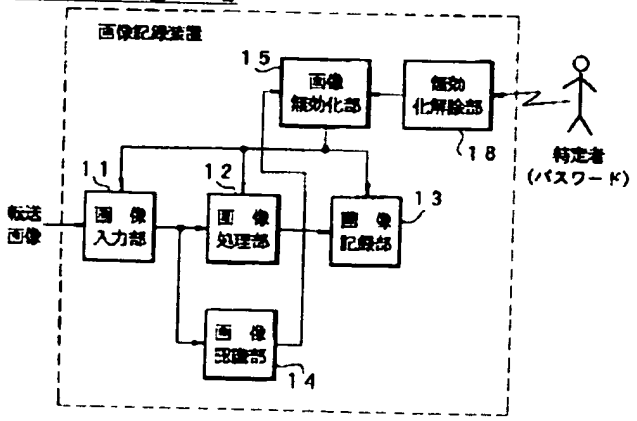
（f）同時動作



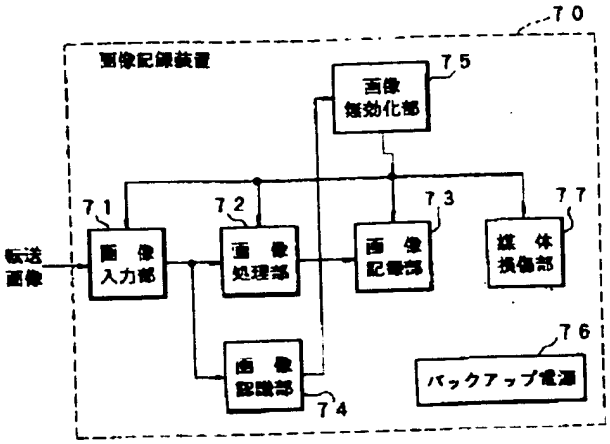
[Drawing 21]



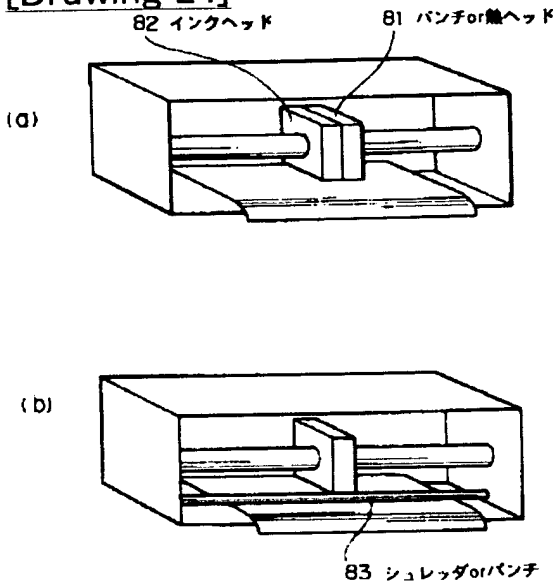
[Drawing 22]



[Drawing 23]



[Drawing 24]



[Translation done.]